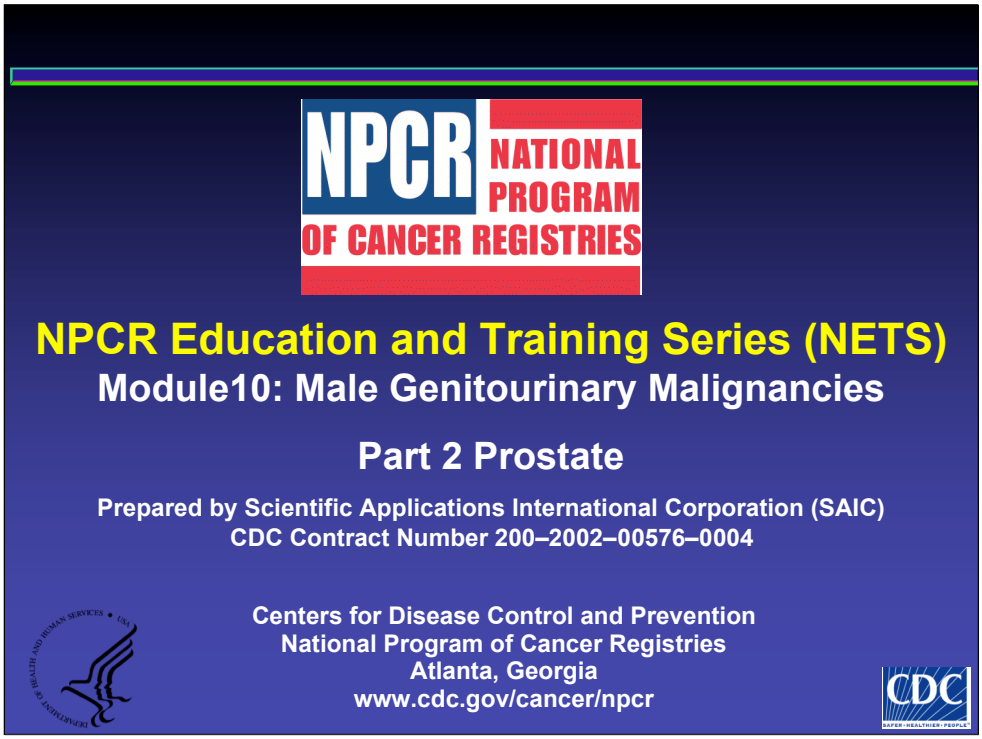
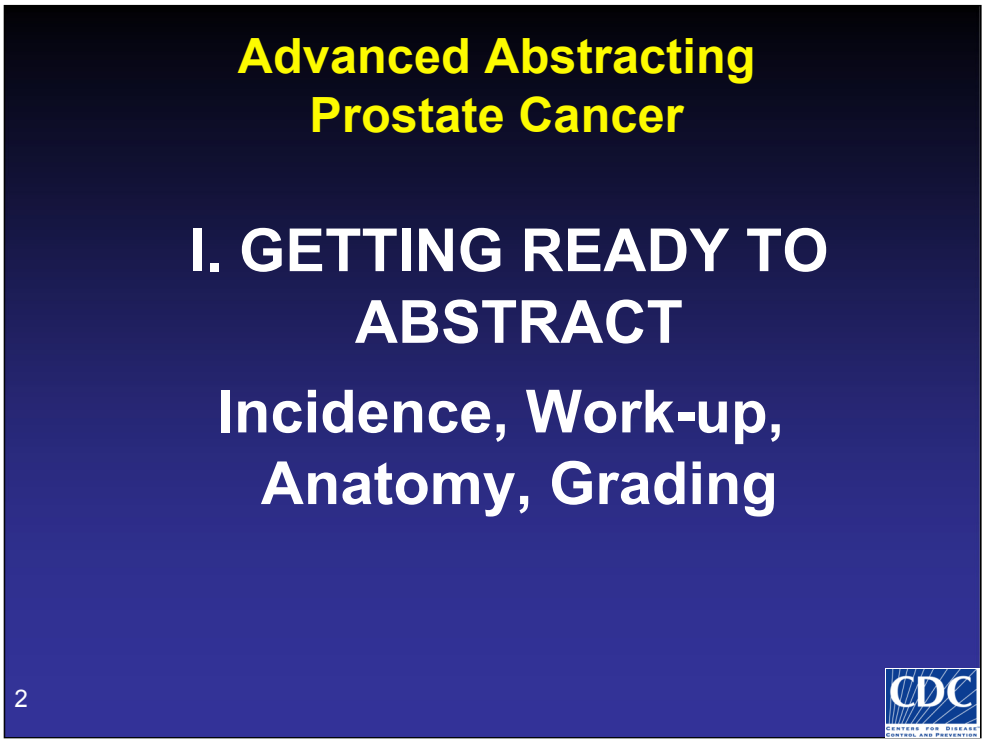
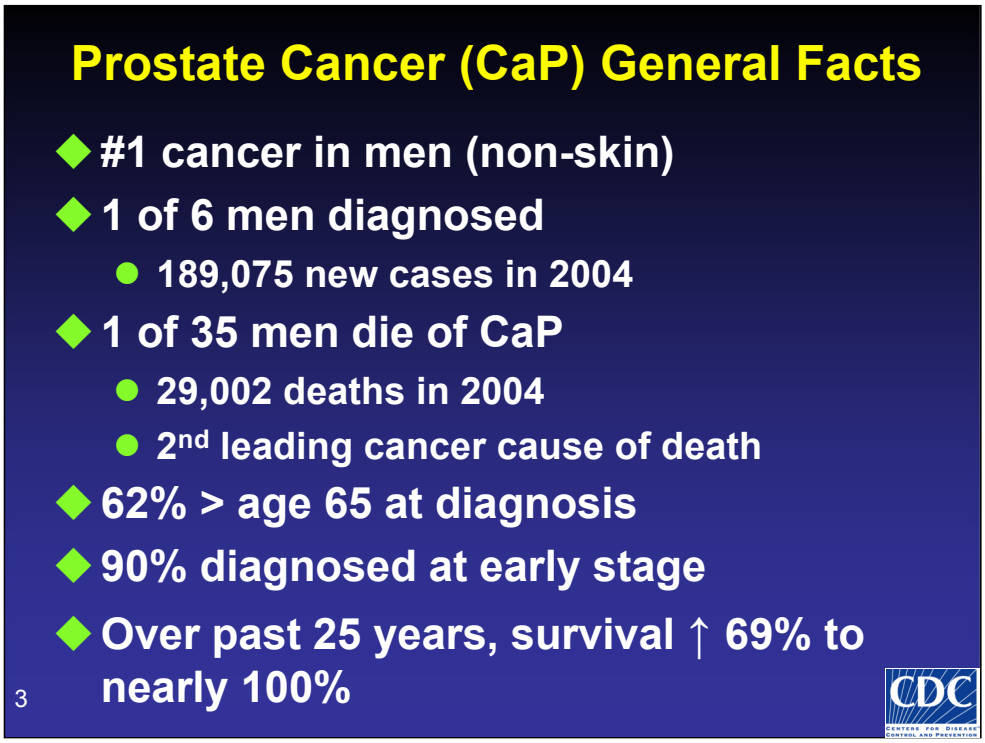

NPCR
NATIONAL
PROGRAM
OF CANCER REGISTRIES
NPCR Education and Training Series (NETS)
Module10: Male Genitourinary Malignancies
Part 2 Prostate
Prepared by Scientific Applications International Corporation (SAIC)
CDC Contract Number 200–2002–00576–0004
Centers for Disease Control and Prevention
National Program of Cancer Registries
Atlanta, Georgia
www.cdc.gov/cancer/npcr
CDC



In this advanced abstracting module, we'd like to address many areas in how we code prostate cancer information.

The first section of this prostate cancer module provides information on incidence and mortality, diagnostic procedures, regional anatomy and grading of the primary histology, adenocarcinoma.



Prostate cancer is the number one cancer in men, if you don't count basal or squamous skin cancers. One of every six men will be diagnosed with it, but only one of 35 men will die of it. It is the second leading cause of cancer death behind lung cancer. Approximately one of every three male cancer patients has prostate cancer.

The majority of men are Medicare age at diagnosis. Most men are diagnosed at an early stage (Stage I or Stage II) thanks to screening efforts.

Over the past 25 years, the 5-year survival rate for all stages has increased from 69% to nearly 100%.

Resources: *United States Cancer Statistics* and the American Cancer Society

Gender: Being male is 100% risk!

Age: Two-thirds of all prostate cancers are found in men over 65. It is said that if a man lives to be 100, he WILL have prostate cancer. You can see by the table that prostate cancer is rare under age 40, but much more common over age 60.

Race: Prostate cancer is more common in African American men than Caucasians, and they're twice as likely to die from it. It occurs less frequently in Asian males.

Nationality: Prostate cancer is most common in North America and northwest Europe; and less common in Africa, Asia, and Central and South America.

Family History: First degree relatives (father/brother) are more likely to develop prostate cancer, especially if the relatives were diagnosed at a younger age.

Diet: A diet with an excess of red meat and high fat dairy (which usually means men eat fewer fruits and vegetables) has been linked to an increased risk of prostate cancer.

Some of the other possible risk factors that have been investigated include tobacco abuse, benign prostatic hypertrophy, sexually transmitted diseases, obesity, and history of vasectomy, none of which have been proven to be causative factors for prostate cancer.

Resource: American Cancer Society, www.prostatecancerfoundation.org

Prostate Cancer Incidence (USA)

USCS Age-Adjusted Incidence Rates by Race and Ethnicity, 2004

Race and Ethnicity	Rate*†
All Races Combined	145.3
White	134.5
Black	217.5
American Indian/Alaska Native‡	76.6
Asian/Pacific Islander‡	79.8
Hispanic‡§	121.9

* Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population.

† Data are from selected state cancer registries that meet the data quality criteria for all invasive cancer sites combined. Rates over approximately 96% of the U.S. population.

‡ Data for racial or ethnic population other than white or black should be interpreted with caution.

§ Hispanic origin is not mutually exclusive from race categories.

Source: *United States Cancer Statistics: 1999-2003 Incidence and Mortality* (http://www.cdc.gov/uscs)

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On the USCS Web site (http://www.cdc.gov/uscs), there are data available for prostate cancer for men of all ages.

What is causing this disparity between the races, especially black versus white? Some interesting theories have been proposed.

Black men living in North America do not get the exposure to ultraviolet (UV) light sufficient for the synthesis of vitamin D, which may be somewhat inhibited through higher levels of melanin.

American-style diets focus on meat and saturated fats rather than vegetables, whole grains, and olive oil, thereby increasing obesity. This may play just as large a factor as race, especially when looking at the lower incidence rates in Asians and Indians. Resource: www.prostate-cancer.com

The rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population (19 age-groups—Census P25–1130).

Data from population-based central cancer registries in these states must meet the selected criteria for inclusion in USCS. There are several criteria: case ascertainment is 90% or more complete; no more than 5% of cases are ascertained solely on the basis of a death certificate; no more than 3% of cases are missing information on sex; no more than 3% of cases are missing information on age; no more than 5% of cases are missing information on race; and at least 97% of the registry's records passed a set of single-field and interfield computerized edits. The rates cover approximately 98% of the U.S. population.

Data for racial or ethnic populations other than white or black should be interpreted with caution. Although state registries across the country use standardized data items and codes for both race and ethnicity, the initial collection of this information by health care facilities and practitioners, as well as the procedures for assigning and verifying codes for race and ethnicity, are not well standardized. Thus, some inconsistency is expected in this information.

Hispanic origin is not mutually exclusive from white, black, American Indian/Alaska native, and Asian/Pacific Islander.

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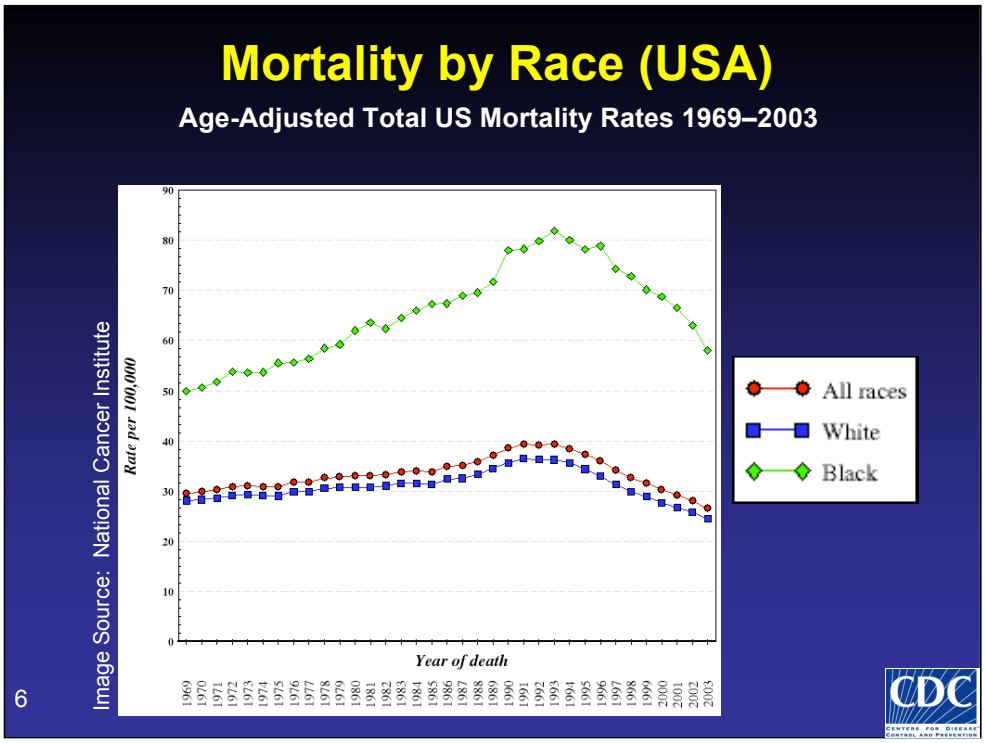
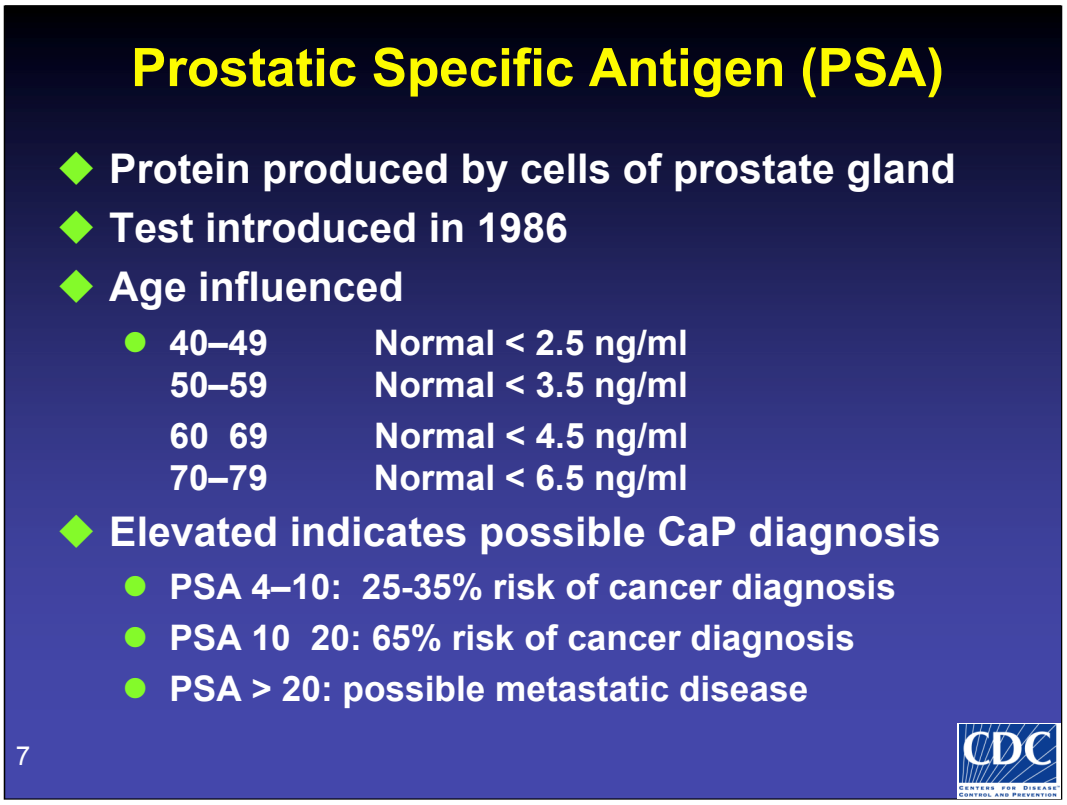


Age-Adjusted Total US Mortality Rates For Prostate Cancer, All Ages For 1969–2003 by Race
Age-Adjusted to the 2000 U.S. Standard Population (from SEER Web site)

Statistics were generated from data provided by the U.S. National Center for Health Statistics.

Why the bump in mortality rates in early 1990s? The answer is not known at this time.

In a study published in the April 2007 issue of *Cancer*, it was reported that access to medical care may be a contributing factor in the difference in mortality for black versus white patients. Black patients frequently seek care only via emergency rooms and do not develop trust in their physicians. Black patients were more likely to have to request screening for prostate cancer in contrast to screening being recommended to white patients.



Let's talk about screening items.

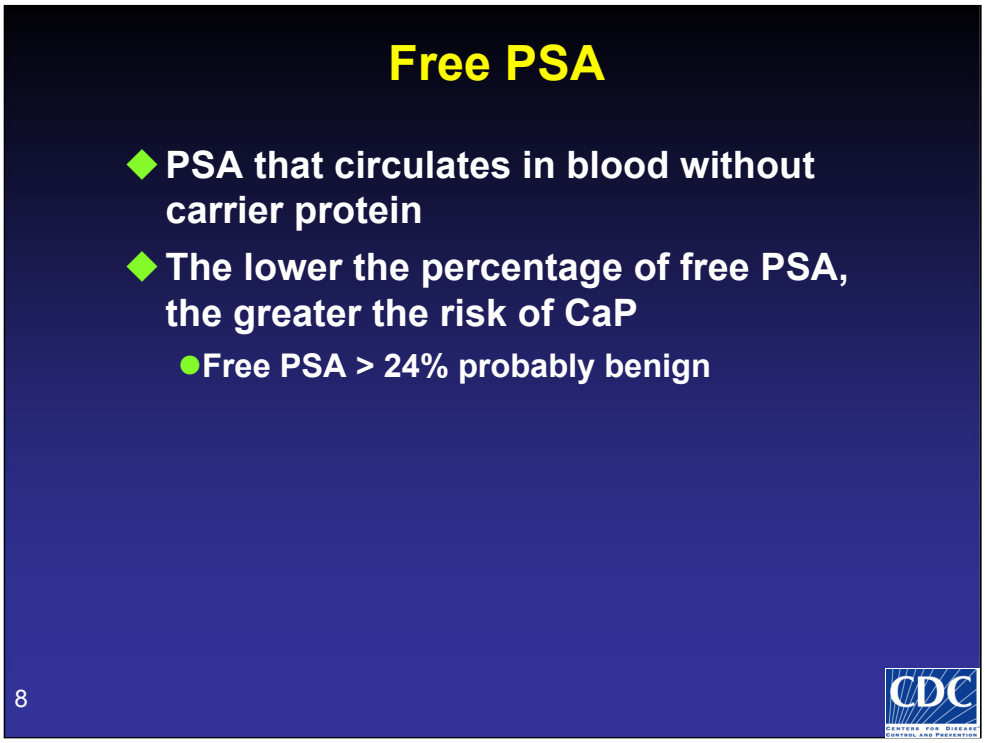
PSA is just a protein. It elevates with age. It also elevates with a prostate disease process, either benign or cancer. Reasons for an elevated PSA include benign prostatic hyperplasia (BPH), prostate infection, prostate manipulation (physical exam prior to testing), and prostate biopsy.

What is a normal PSA? That depends on the age of the patient as seen in the statement on the slide. The older the patient, the higher the "normal" range could be.

In general, if the PSA is 4 or over, a biopsy will be recommended. If the PSA is over 20, the risk of metastatic disease in lymph nodes or distant disease is higher and would suggest that additional testing, such as bone or PET scan, would be appropriate. The higher the PSA, the greater the suspicion that metastatic disease will be found. However, there are some patients who have negative or low PSA values.

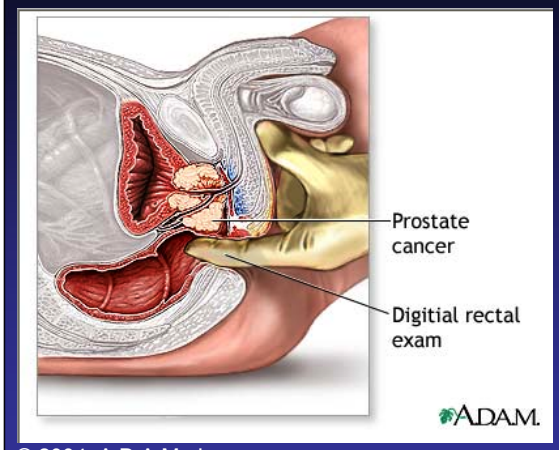
Note: PSA is actually a misnomer. This protein can also be found in women, especially in breast secretions including lactation. (www.clinchem.org)

Resources: www.upmccancercenters.com



Another value that may be measured is the percent of “free” PSA. Free PSA is the percentage of the total PSA that circulates in the blood without a carrier protein. Most patients with prostate cancer have a free PSA less than 15% (the lower the percentage, the greater the risk). If free PSA is more than 24%, the patient probably has benign hyperplasia. Free PSA may eventually allow doctors to forego biopsy altogether in men with PSA between 4 and 10, and a free PSA more than 24%.

Digital Rectal Exam (DRE)



- PSA can be falsely elevated
- DRE does not palpate entire prostate gland
- Abnormal: nodules, hard spots, soft spots, enlarged

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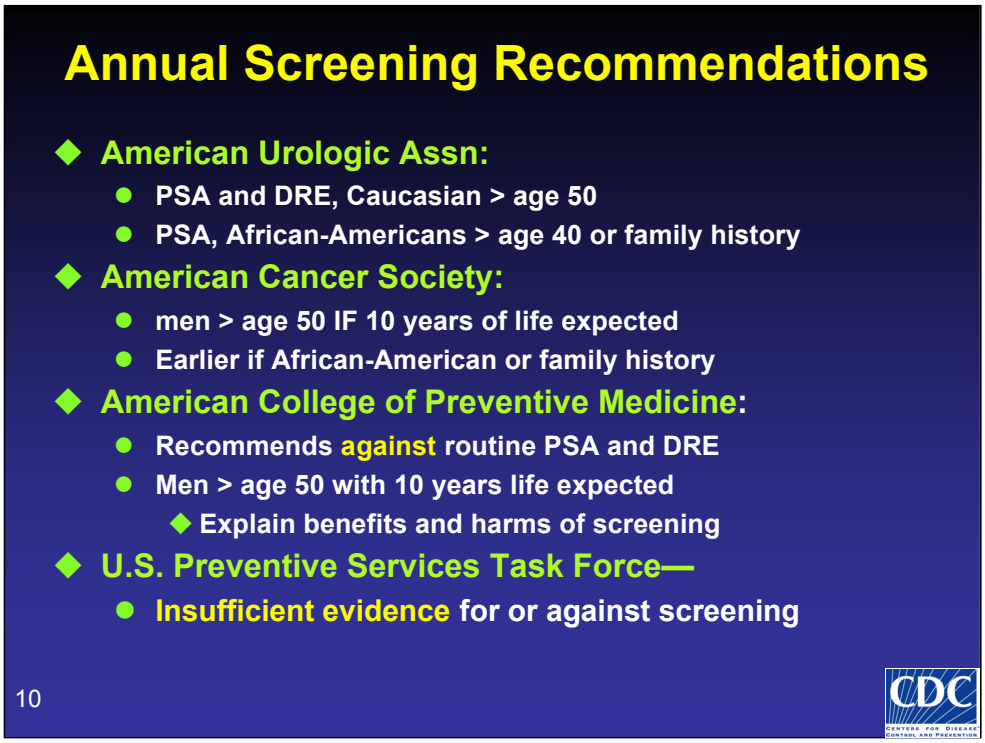
CDC

The digital rectal exam is done because PSA alone is not diagnostic. It is possible to have a cancer that does not secrete PSA (or the level is not high enough), but the exam could show definite abnormalities that suggest biopsy should be done.

It is not possible to palpate the entire gland due to its location in relation to other organs in the region. However, the part that is palpated is where most cancers arise, so it is still helpful.

An abnormal digital rectal exam could be described with any of the terms on the slide. However, just because one of these words is used to describe the DRE, that does not mean the patient has prostate cancer. In most cases, a biopsy is still necessary.



Basically, screening involves some kind of PSA test and a digital rectal exam. How often? When to start? The organizations listed on the slide vary in their recommendations.

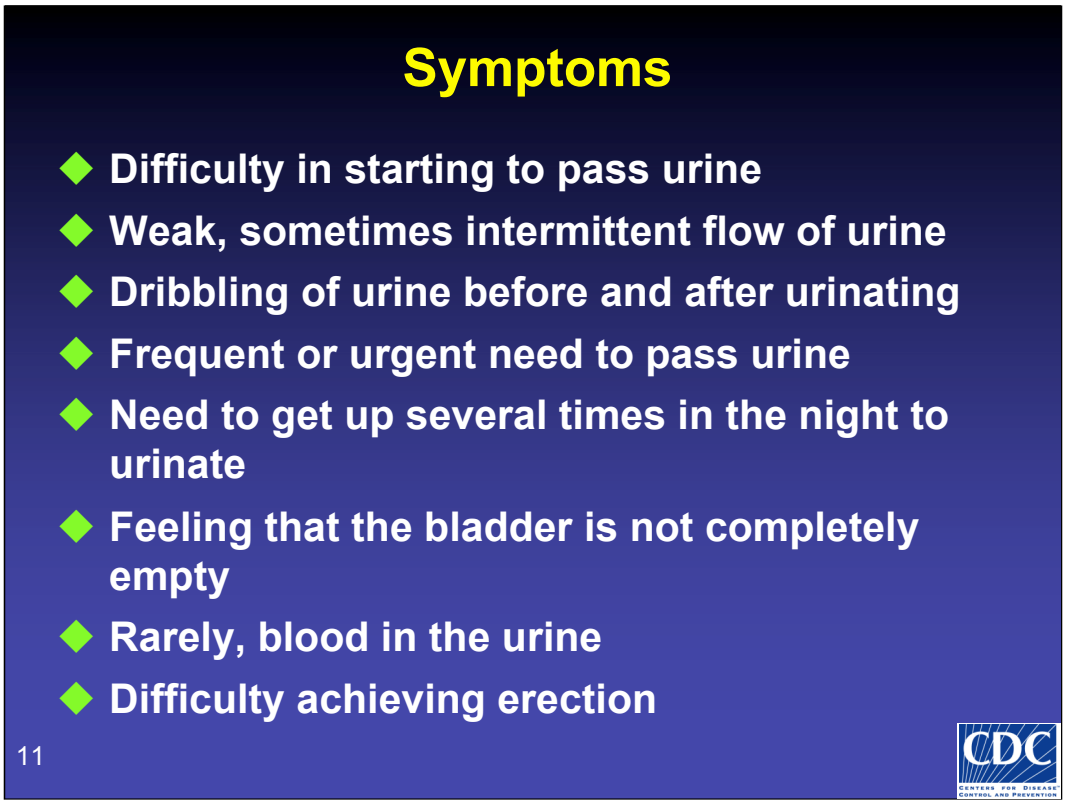
The U.S. Department of Health and Human Services Agency for Healthcare Research and Study, U.S. Preventive Services Task Force or USPSTF, "concludes that the evidence is insufficient to recommend for or against routine screening for prostate cancer using prostate specific antigen (PSA) testing or digital rectal examination (DRE)."

The USPSTF "found good evidence that PSA screening can detect early-stage prostate cancer but mixed and inconclusive evidence that early detection improves health outcomes. Screening is associated with important harms, including frequent false-positive results and unnecessary anxiety, biopsies, and potential complications of treatment of some cancers that may never have affected a patient's health. The USPSTF concludes that evidence is insufficient to determine whether the benefits outweigh the harms for a screened population."

Men of screening age and in good health may chose screening because treatment could provide cancer-free years.

Men over 70 may not want the test at all; by then, there are usually other health problems which will be the cause of death (NOT the cancer), and prostate cancer treatment has comorbidities/complications which could add even more health problems.

In a perfect world, men would hear and understand the concept that not every cancer has to be diagnosed. Of course, that means that doctors must be willing to have these philosophical discussions with their patients. That may not be happening due to a) physician's training to "heal" everyone and b) doctors fear a lawsuit. Of course, "watchful waiting" may be the treatment of choice.

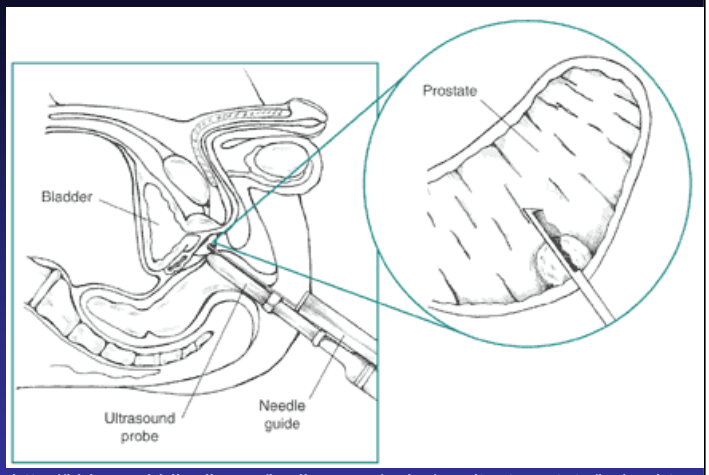


These are symptoms of an aging male patient, benign prostatic hypertrophy, or prostate cancer. Many men may accept the symptoms and blame old age. They may not seek a physician from fear.

Resources: www.prostatecancerfoundation.org, www.nlm.nih.gov

Biopsy (TRUSP)

Ultrasound shows abnormal (hypoechoic) area on sonogram needing biopsy



http://kidney.niddk.nih.gov/kudiseases/pubs/medtestprostate/index.htm

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During a transrectal ultrasound of the prostate, the doctor inserts a probe slightly larger than a pen into the rectum. The probe directs high-frequency sound waves at the prostate, and the echo patterns form an image of the gland on a television monitor. The image shows the size of the prostate, and whether there are any irregularities, but cannot unequivocally identify tumors. However, if it shows areas of low echo (hypo-echoic), that would indicate an abnormality that should be biopsied. Prostate cancers are predominantly hypoechoic, but can also produce echoes stronger than surrounding tissues (hyperechoic) or mixed or irregular echogenicity. Both hyperechoic and mixed echogenicity should be considered suspicious for cancer when performing transrectal ultrasound of the prostate.

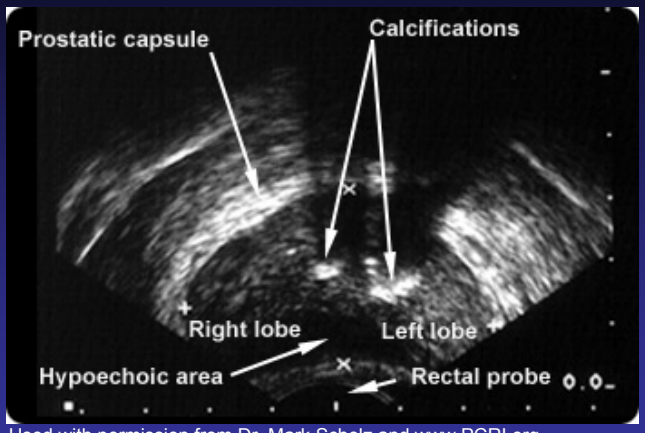
(reference: **Clinical Significance of the Echogenicity in Prostatic Ultrasound Findings in the Detection of Prostatic Carcinoma.** A. Manseck, K. Guhr, O. Hakenberg, K. Rossa, M.P. Wirth. *Onkologie* 2000;23:15–156)

Note: This is NOT the same as a TURP (transurethral resection of prostate), which is a treatment procedure. Newer registrars sometimes get them confused.

Usually, the prostate is biopsied in a grid pattern of six (sextant) or more areas. The size of the prostate, the size of the patient, the comfort level of the patient and the experience of the urologist may play a factor in the exact number of specimens submitted.

Sonography

Transrectal sonogram of the prostate (looking up from the feet of a patient toward his head)



Used with permission from Dr. Mark Scholz and www.PCRI.org

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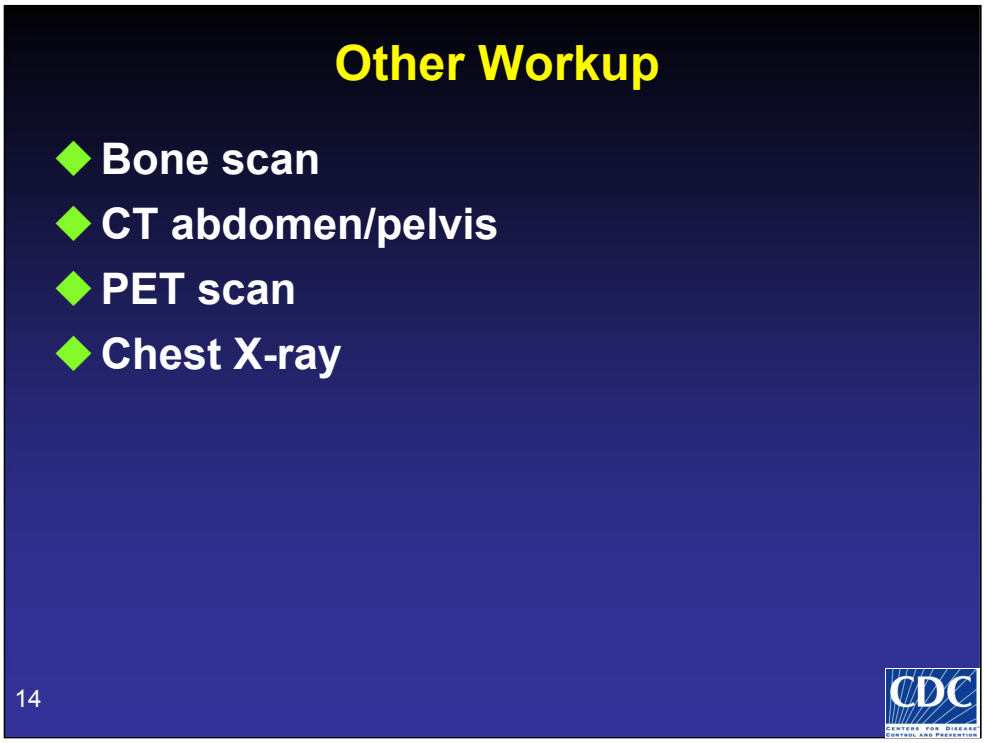
The arrow in this image shows a hypoechoic area in the right lobe of the peripheral zone.



Several other tests may be ordered to assess tumor spread outside the prostate.

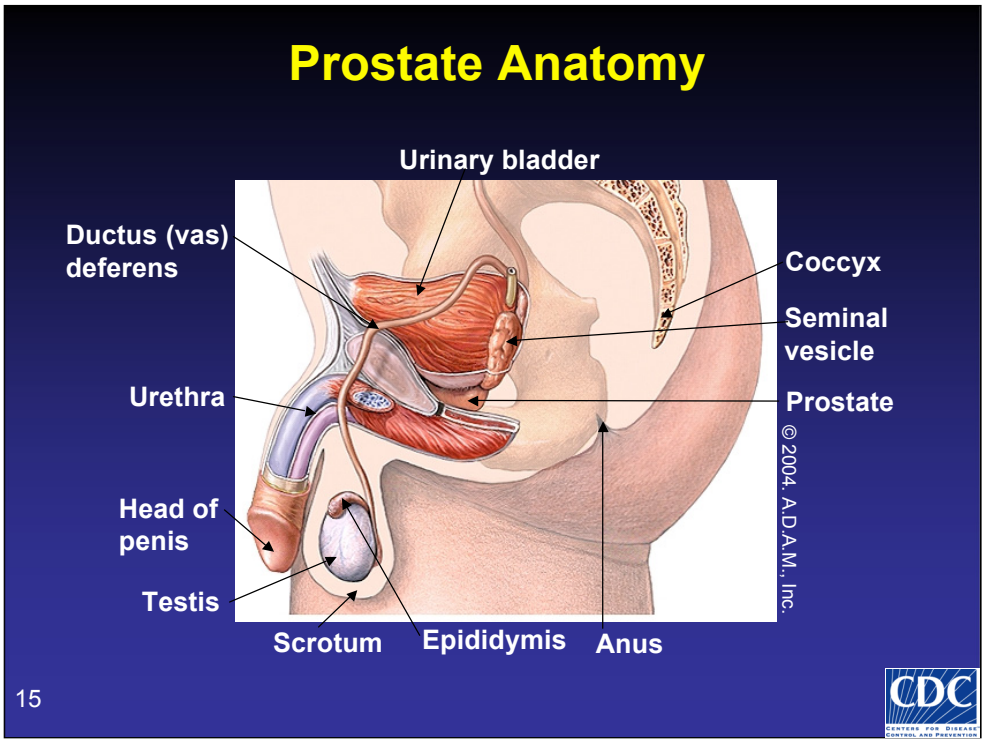
The bone scan looks for bone metastases, because bone is the most common site of distant mets.

A CT scan of the abdomen may be able to find positive lymph nodes or tumor extension through the prostate capsule and into adjacent structures, thereby sparing the patient surgical exploration or prostatectomy.

PET scans could reveal bone metastases or involvement of other metastatic sites.

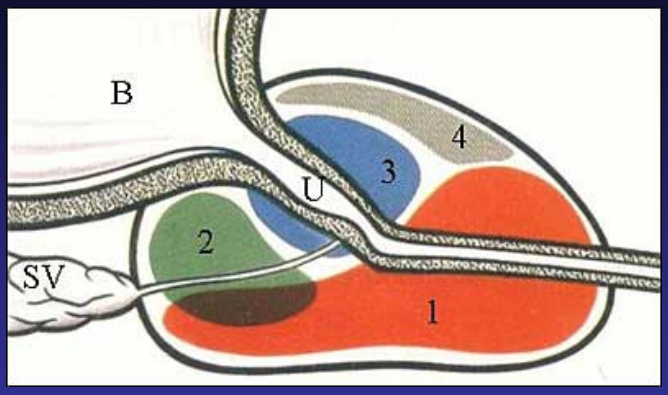
The chest X-ray looks for lung metastases, another common site of spread from the prostate.

However, if the PSA is less than 10, it is possible that none of these tests will be done. Per the Collaborative Staging Manual, this may be clinically N0 and M0 following the Inaccessible Rule for early stage cancer.



The prostate is only as big as a walnut. This shows the prostate in relationship to the other organs and structures near it. It's very easy to code the primary site … it's C61.9 with no subsites, not paired.

Prostate Zones



1 Peripheral zone
2 Central zone
3 Transitional zone
4 Anterior fibromuscular zone

B Bladder
U Urethra
SV Seminal vesicle

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Picture used with permission: From Mark Frydenberg & Nathan Larentschuk. Chapter on Benign Prostatic Hypertrophy, in WWW.ENDOTEXT.ORG, Nov 2007: V.1; published by Endocrine Education, Inc., South Dartmouth, MA. http://www.endotext.org/male/male9/male9.htm

This picture shows the schema of prostate zones. Prostate zones can be visualized on ultrasonography.

1 – The peripheral zone is where 75% of the total gland exists and 70% of new prostate cancers arise. This area is what is easily felt by digital exam. The peripheral zone is in the outer most part of the prostate, and the lower peripheral zone is fairly close to the rectal wall.

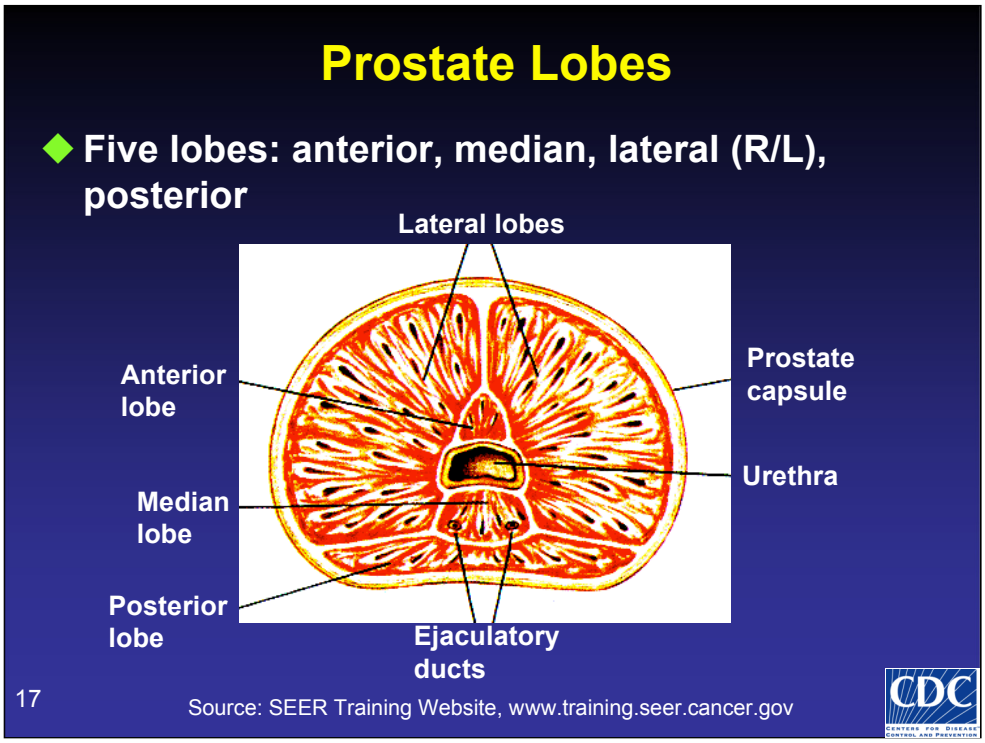
2 – The central zone comprises 25% of the gland. Ejaculatory ducts travel through this zone (where seminal vesicles connect to prostate). It's rare for any disease process to occur here, other than inflammation or prostatitis.

U – Urethra traveling through the prostate. Transitional cell carcinomas arise within the urethra and may invade the prostate, but are not prostate cancers. Urothelial or transitional cell carcinomas of the prostate should be coded and staged as urethral primaries.

3 – The transitional zone comprises 5–10% of the gland, surrounds the urethra and is where benign prostatic hypertrophy (BPH) arises. 20% of cancers diagnosed are found here.

4 – The fibromuscular zone is predominantly fibromuscular stroma with no glandular structures. This is not a site for prostate cancer.

Most prostate cancers are multifocal, with synchronous involvement of multiple zones of the prostate, which may be due to clonal (exact duplicates of the parent cell) and nonclonal tumors. (www.emedicine.com) However, we only have one code for the prostate (C61.9) no matter which zones are involved.



The prostate is anatomically divided into lobes. The anterior lobe is the portion of the gland that lies in front of the urethra. It contains no glandular tissue but is completely made up of fibromuscular tissue. The median or middle lobe is situated between the two ejaculatory ducts and the urethra. The lateral lobes make up the main mass of the prostate. They are divided into right and left, and are separated by the prostatic urethra. The posterior lobe spreads across the back of the prostate closest to the rectum, so it is the part most easily palpated through the rectum during a digital rectal exam (DRE).

The transitional zone roughly corresponds to the anterior lobe, the peripheral zone corresponds to the posterior lobe, and the lateral lobes span all zones of the middle, which corresponds roughly to the central zone.

The prostate is surrounded by the prostatic capsule. Invasion of the capsule increases the stage of disease.

Histology

- 99% Adenocarcinoma
  - Per MP/H, code acinar to 8140
- 1% Other
  - Sarcoma, small cell, other
- PIN–Do NOT abstract*
  - 30% men will go on to develop CaP
  - Close follow-up recommended for 2 years

* except reportable by agreement

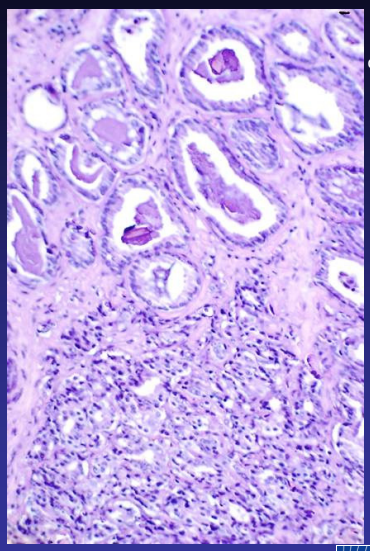


Image source: National Cancer Institute

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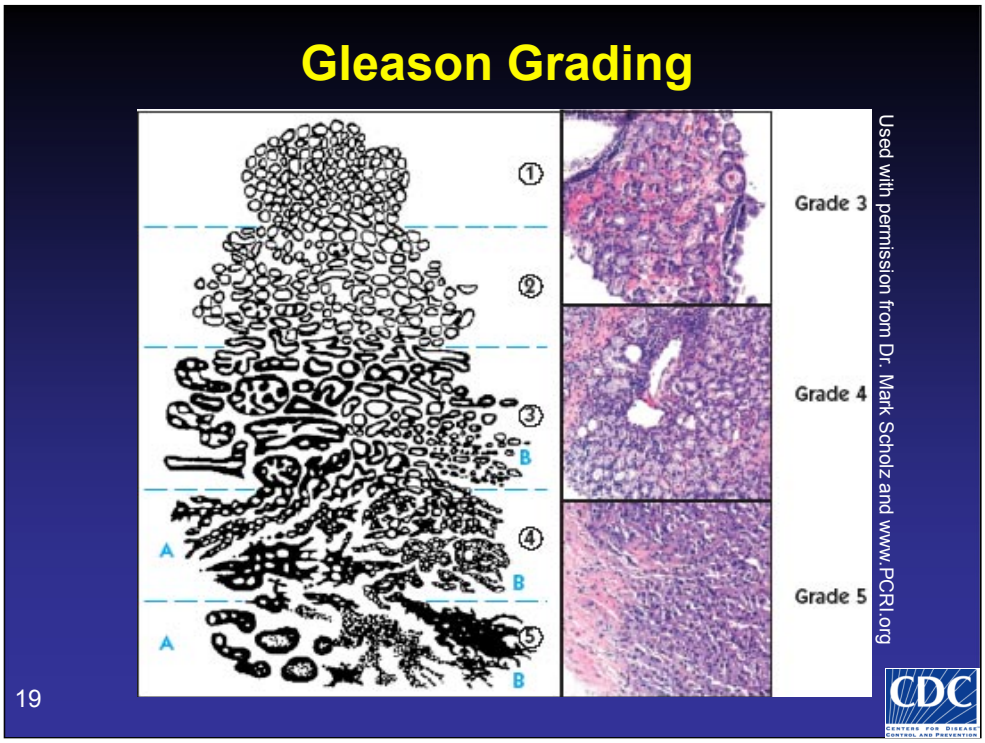
CDC

Prostate is an easy site to code histology, because the cell type is almost always adenocarcinoma 8140/3. Per the 2007 Multiple Primary and Histology Coding Rules Equivalent Terms and Definitions for "other sites", when acinar is mentioned in the description of prostate cancer, it is not being used as a cell type but as a descriptive word. Acinar means glandular. Therefore we code it to 8140. Also, according to the Multiple Primary rules, there is only one prostate adenocarcinoma per man per lifetime, so we don't have to worry about additional abstracts. The histology rules specify coding 8140. On rare occasion, there will be another cell type found in the prostate and we can code that appropriately. If that happens, the patient might have more than prostate cancer. For example, adenocarcinoma is treated with cryosurgery and 6 years later a small cell carcinoma is found in the prostate.

PIN, or prostatic intraepithelial neoplasia is not reportable to most cancer registries. Other names for prostatic intraepithelial neoplasia include intraductal hyperplasia, hyperplasia with malignant change, large acinar atypical hyperplasia, marked atypia, and ductal-acinar dysplasia. We are not required to abstract these cases, even for NPCR registries. 30% of patients found with PIN will go on to develop cancer of the prostate (CaP), so close follow-up with several biopsies is recommended for the next two years. If your registry is required to abstract these as reportable-by-agreement, the 2007 Histology rules include a rule about PIN saying to code it to 8148/2 for glandular neoplasia.

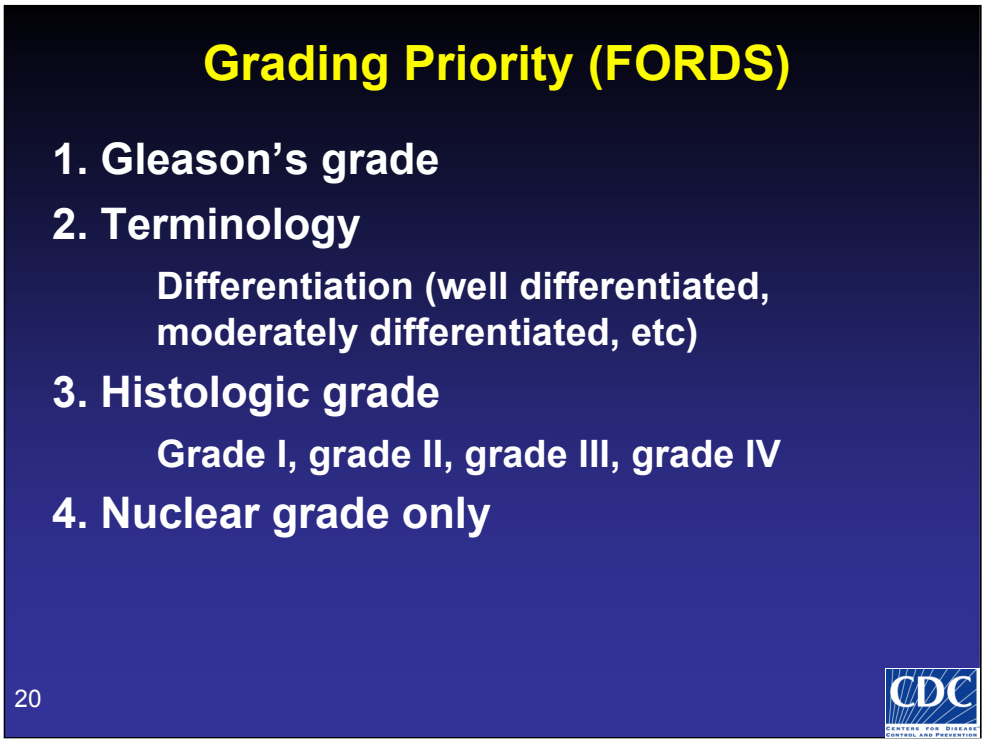


The Gleason scoring system was developed by Dr Donald Gleason in 1974. The system is based on microscopic tumor patterns assessed by a pathologist, while subjectively interpreting the biopsy specimen.

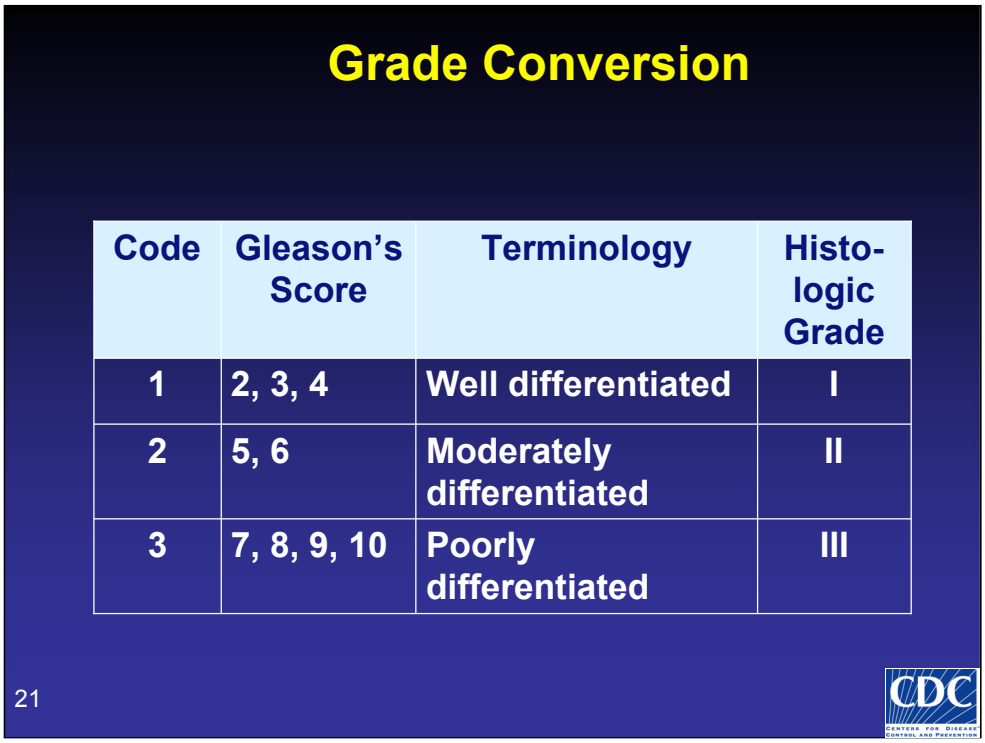
The *Primary Gleason grade* should be greater than 50% of the total pattern seen. The *Secondary Gleason grade* has to be less than 50%, but at least 5%. The grading process may be performed on a biopsy specimen, but if a prostatectomy (larger specimen) is available, that would provide more thorough and accurate information.

To grade a prostate cancer specimen, the pathologist identifies a primary and secondary pattern, each on a scale of 1 to 5, and adds them together to create a score. As an example, if the path report reads Gleason patterns 3 (primary) and 2 (secondary), this gives a total score of 5. Alternatively, the pathologist may report only a score in a range from 2 to 10 without defining the primary and secondary patterns.

We'll discuss this more in the section on Collaborative Staging.



According to the FORDS manual, we should assign the grade code according to the priority of information available. If the Gleason's grade is noted, that is the priority information we use. If it is not in our chart, we can look for words of differentiation. If the doctor gives us conflicting information (well differentiated, grade 2), we follow the priority if we cannot clarify with the pathologist what was meant. In the example (well differentiated, grade 2), we would code the grade as "1" for well differentiated, because it is of higher priority.

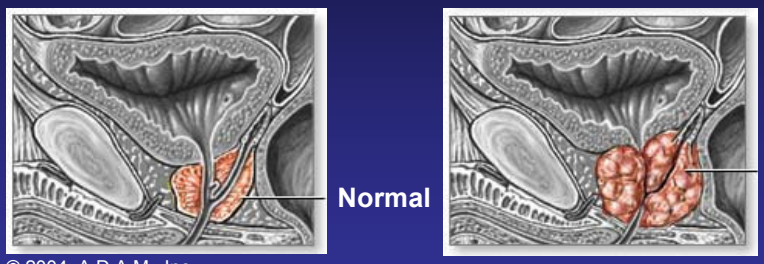


A conversion table similar to this for recording the Gleason score in the sixth digit of the ICD-O-3 morphology code is found on page 15 of FORDS 2007, and in the SEER Program Coding Manual.

Note: Code 7 was moved from moderately differentiated to poorly differentiated. This is effective for cases diagnosed 01/01/2003 and after.

Advanced Abstracting
Prostate Cancer

II. STAGING



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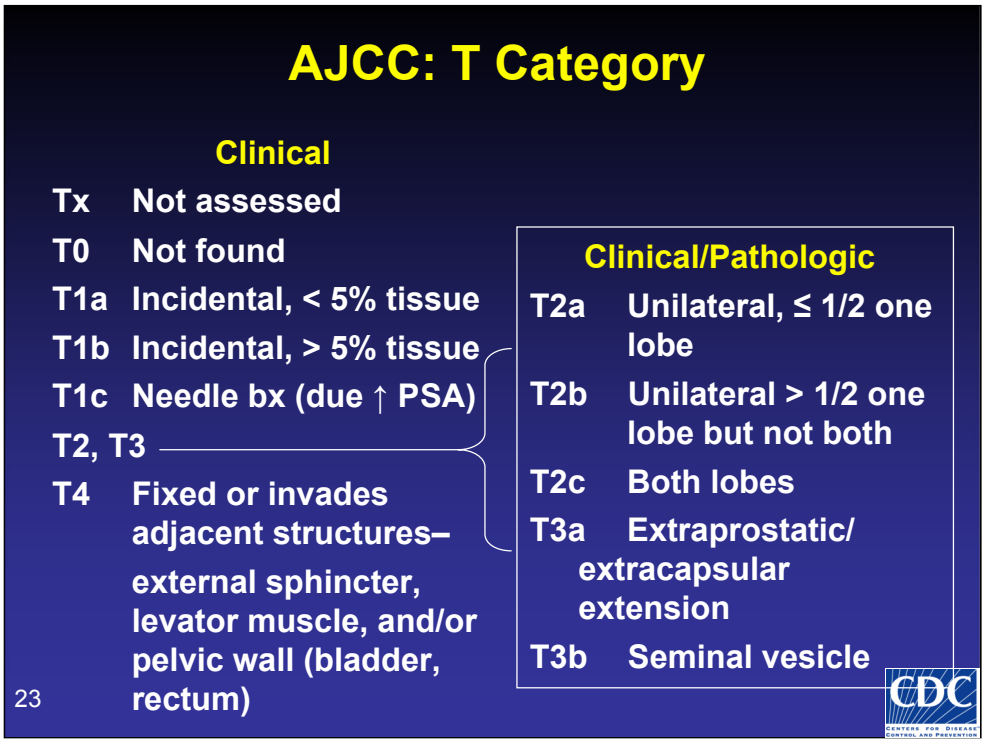
Now that we have had a quick introduction to prostate cancer, and how it is diagnosed and scored, we can further discuss the staging of prostate cancer in the AJCC TNM system and Collaborative Staging.



Clinical T is the only place to find the T1 category. T1a and T1b are incidental diagnoses, usually found when the patient undergoes a transurethral resection for benign prostatic hypertrophy. The pathologist must actually count the chips of prostate tissue removed, and estimate the percentage that are affected by cancer. T1c can be used when the cancer was inapparent by normal means (physical exam, radiology), but the biopsy was done because of increased PSA. If the cancer was apparent (PE, radiology), then the T1 category must be bypassed and the tumor is at least T2.

Clinical T4 includes involvement of other structures including the bladder and rectum.

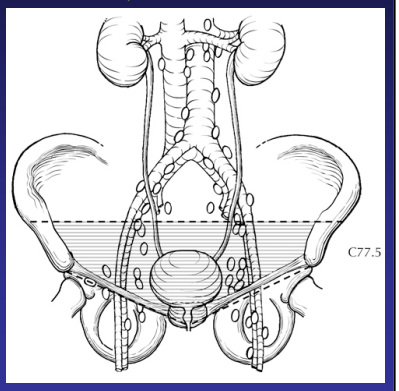
T2 and T3 definitions are similar in the clinical and pathologic categories.

If the patient was diagnosed with metastasis, the patient has known disease and this could not be an incidental finding. This also should be coded at least T2.

AJCC: N Category

- Regional nodes = pelvic below bifurcation of common iliac artery
  - Hypogastric
  - Iliac (internal, external, NOS)
  - Obturator
  - Pelvic, NOS
  - Sacral (lateral, presacral, promontory, NOS)
- Laterality doesn't matter

- Nx
- N0
- N1



AJCC Cancer Staging Atlas, 2006. Used with permission.

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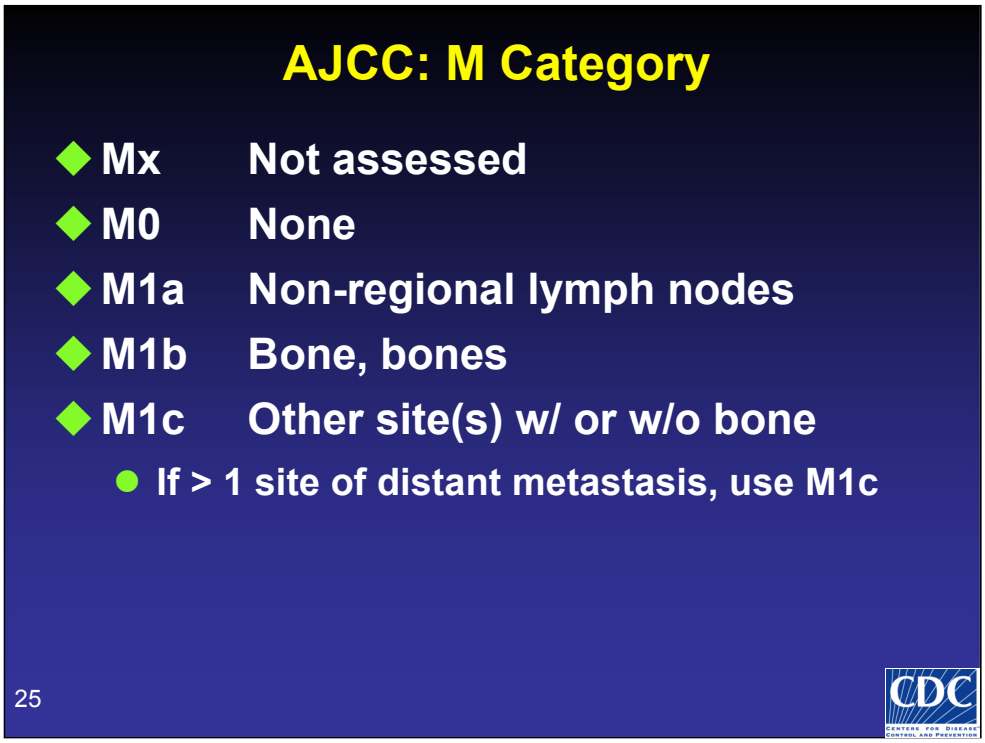
The regional nodes are pelvic nodes below the bifurcation of the common iliac artery. They are listed on the slide. Laterality of positive nodes doesn't matter to coding.

The codes for clinical and pathologic N are the same. All regional nodes are coded as N1.

The picture shows the regional lymph nodes in the shaded area. The distant lymph nodes above the shaded area include the aortic and common iliac nodes. Distant lymph nodes below the shaded area include the deep inguinal and superficial inguinal. Distant lymph nodes are coded in the M category.

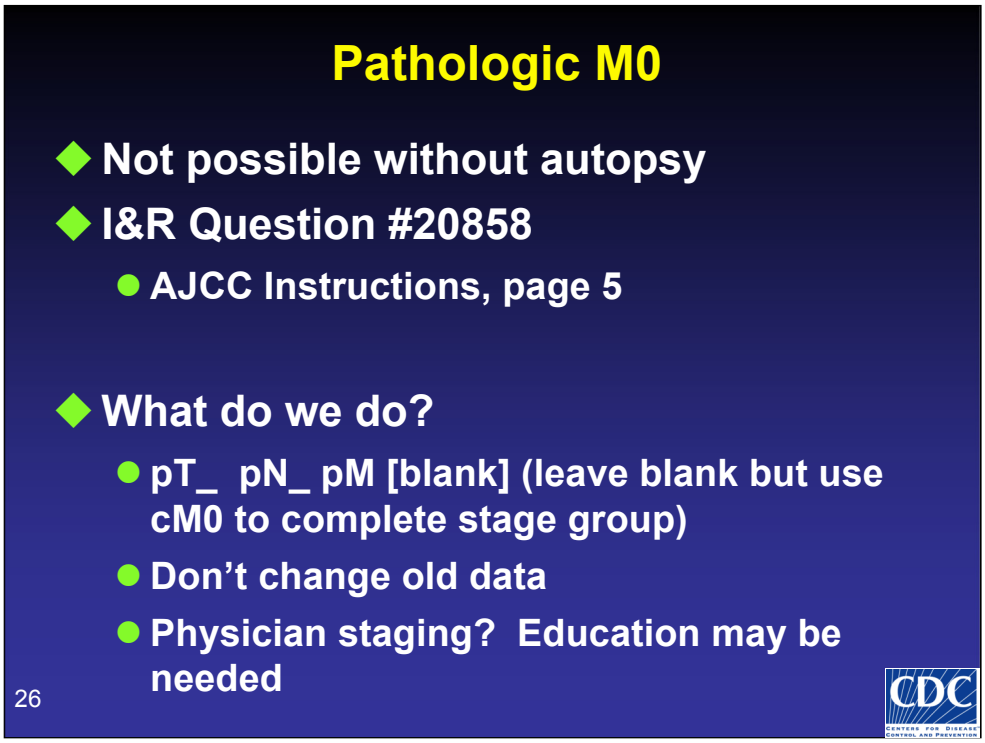


The M category for prostate is one of the few in TNM that is subdivided into M1a, M1b, and M1c.

Distant metastasis (category M1a) includes the non-regional nodes (such as common iliac, and inguinal) seen on the previous slide, and other farther lymph nodes such as axillary, retroperitoneal, etc.

Bone metastases by themselves have a separate subcategory, M1b.

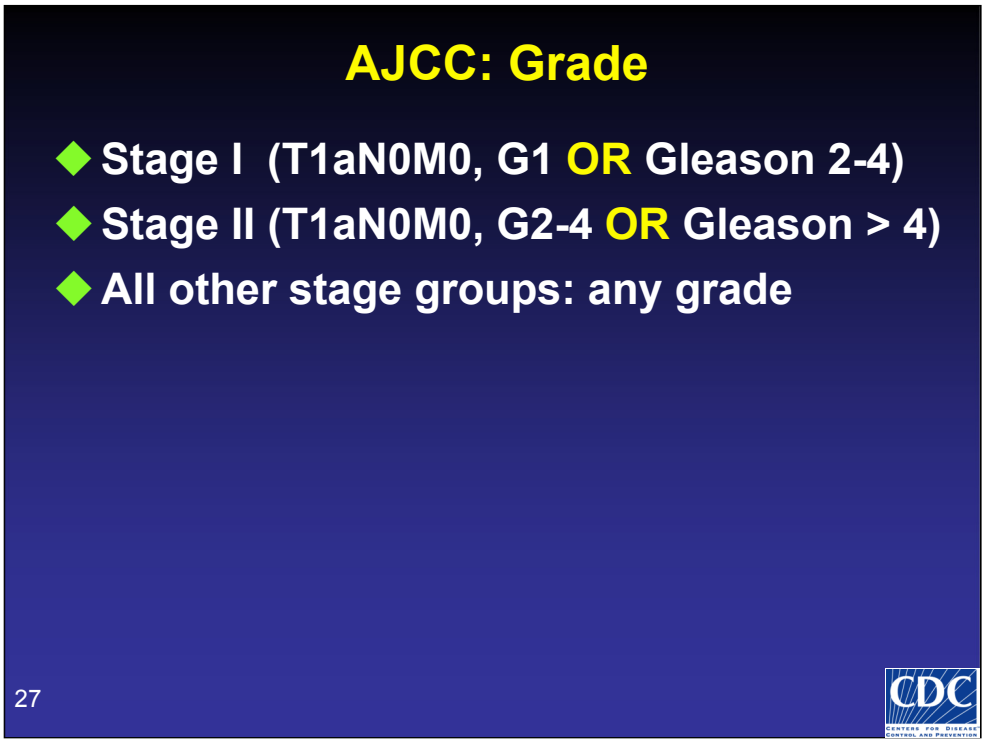
All other distant metastases (liver, lung) are classified as M1c. If there is more than one site of distant metastasis, whether bone is included or not, the AJCC Cancer Staging Manual says to code to M1c.



Coding the pathologic M has been constrained by software systems and requirements to fill in all cTNM or all pTNM to arrive at stage. In discussion with AJCC physicians, it was noted that there is no such thing as pathologic M0 for no metastasis. That would require biopsy of every possible metastatic site within the body. Even if a biopsy of one suspected site was negative (such as liver biopsy), that doesn't mean there couldn't be a sanctuary site that had metastases but was NOT biopsied.

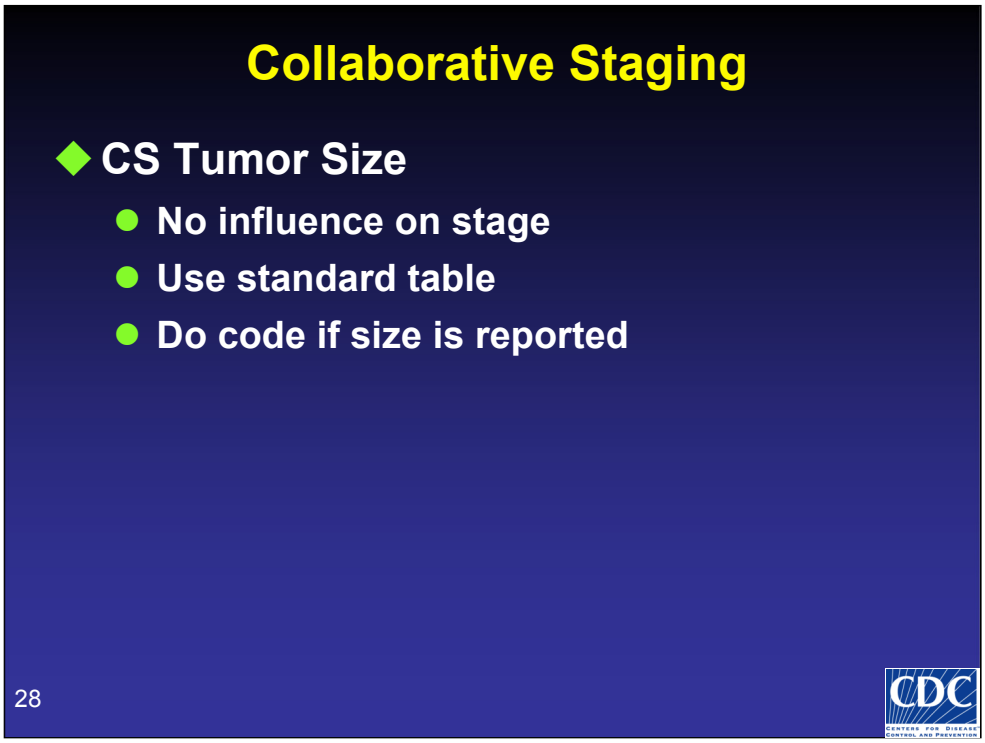
The instructions in the front of the TNM book tell us we can use clinically negative M information when staging pathologic cases. The problem is that we have linear data fields within our computer software. That is, we answer all the pathologic fields (T, N, M) OR the clinical fields (T, N, M) but there is not a place to mix and match the two. We cannot enter pMx because that would be unknown and cause a stage group of "99". Of course, pM1 means distant metastasis was found. So instead, it is recommended that we leave the pM area blank but use the cM0 information to complete the stage group.

If you have been doing this, what should you do with your old data? Nothing. This was not considered an error by EDITS in the past so it doesn't require a change. Most of us make changes in procedures for the sake of consistency when we begin abstracting a new year. If physicians have been checking the pM box, it may require some education. Hopefully, in the 7th edition of AJCC staging, this may be better explained.



When stage grouping the clinical cancers, the grade of a T1a tumor is the determining factor between Stage I and Stage II. The Gleason score can be used to correlate with the grade.

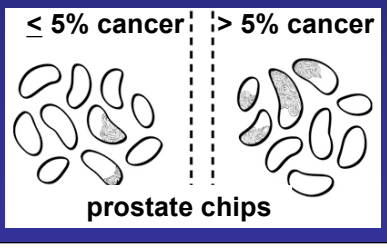
With any stage higher than T1a, any grade can be documented. This will not influence the stage group.



Now we are moving on to Collaborative Staging. For staging purposes, tumor size does not matter. It has no influence on the summary or AJCC stage mapping. We use the standard table and we document a true size if the pathologist notes it; otherwise we code “999”. Size must be documented on the pathology report. We cannot infer a size of the invasive cancer from the size of the prostate on physical exam, nor a radiology exam. We also cannot infer size from the number of lobes involved, nor the percentage of tissue that is malignant.

CS Extension - Clinical

00–In situ
10–T1, NOS
13–T1a ≤ 5% tumor
14–T1b > 5% tumor
15–T1c ↑ PSA, needle biopsy



Clinically Inapparent

- Not palpable
- Not visible on imaging
- Not visible on sonogram
- Incidental finding
- Latent
- Occult

29

AJCC Cancer Staging Atlas, 2006.
Used with permission.

The CS extension for prostate only codes clinical information. Prostatectomy information will be coded in Site Specific Factor 3. The notes before the CS Extension–Clinical section are very extensive, and worth re-reading until you are comfortable with these codes.

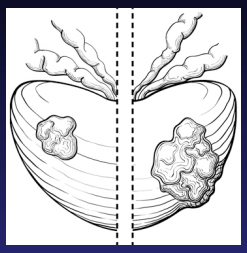
In the priority of codes, the more specific you can be, the better. Codes that end in “0” tend to be more generic.

The right column lists descriptions of those tumors that are considered inapparent, or the ones that would fall into the clinical T1 category. Usually what you are trying to find is the portion of the physical exam documenting the rectal exam or that there were no hypo-echoic areas on sonogram or other radiologic findings.

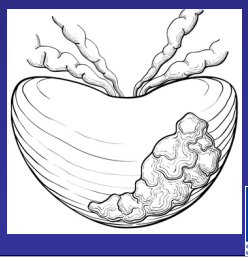
Prostate is unique in the collaborative stage manual in that we describe both clinical and pathologic findings. The CS Extension field is only for the Clinical findings. We will describe pathologic findings (from prostatectomy) in a later field.

CS Extension - Clinical

20–T2, NOS; 1 lobe, NOS
21–T2a ≤ ½ lobe
22–T2b > ½ lobe
23–T2c Both lobes
24–Apparent, confined to prostate; Stage B, NOS
30–Localized, NOS



Above left side: Code 21
Above right side: Code 22
Below: Code 23

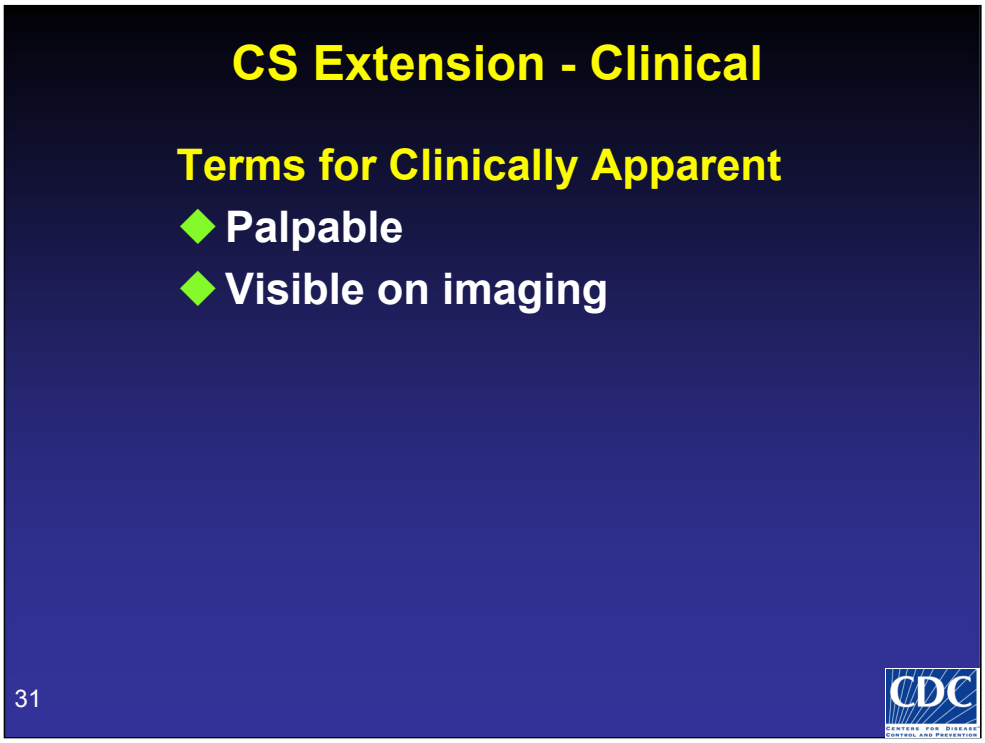


AJCC Cancer Staging Atlas, 2006. Used with permission.

30

The Extension codes in the 20 range describe clinically apparent tumors involving part of one lobe or more.

Doctors wouldn't be planning a prostatectomy if there are regional or distant mets, so we can assume that a patient having a prostatectomy has clinically localized, NOS disease. Code to 30 if no other information available, but avoid using that code if you can be more specific.



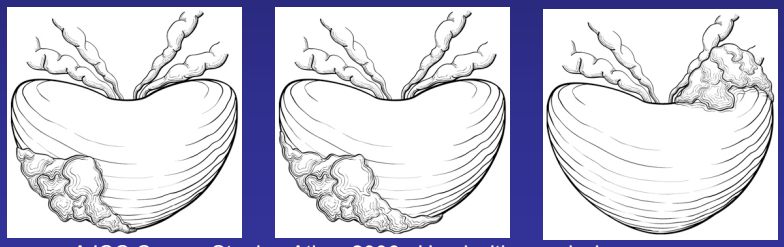
The list of “clinically apparent” words we could use in the past are gone. Physician assured us that they were not using those terms to determine whether a tumor was clinically apparent or not. Using current standards for prostate, an apparent tumor is palpable or visible by

Be advised, however, that other conditions in the prostate may mimic a prostate cancer. These words are just guidelines and are NOT diagnostic of T2/clinically apparent prostate cancer. Whenever possible, confirm that the tumor is clinically apparent from physician documentation such as a physical exam, or x-rays.

CS Extension - Clinical

- 41–T3, NOS; through capsule, NOS
- 42–T3a Unilateral involvement
- 43–T3a Bilateral involvement
- 45–T3b Seminal vesicle involvement
- 49–T3, NOS; periprostatic extension, NOS

Code 42 | Code 43 | Code 45



32

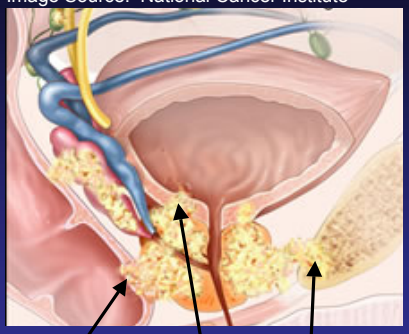
AJCC Cancer Staging Atlas, 2006. Used with permission.

These are the clinical extension codes for a tumor that has gone through the capsule, as noted on physical exam. In AJCC staging, there is no difference between unilateral or bilateral T3a, but we code them separately for accurate documentation. There might be staging changes in future editions of AJCC that will incorporate this information.

CS Extension - Clinical

- 50–Extension to/ fixation to adjacent structures (T4) (not seminal vesicles)
- 52–Muscles, ureter (T4)
- 60–Pelvic wall or bone, "frozen" pelvis (T4)
- 70–Further contiguous extension (T4)
- 95–No evidence (T0)
- 99–Unknown (TX)

Image Source: National Cancer Institute



Code 50 (rectum) Code 50 (bladder) Code 60 (pelvic bone)

33

The T4 codes are explained in more detail in the Collaborative Staging manual.

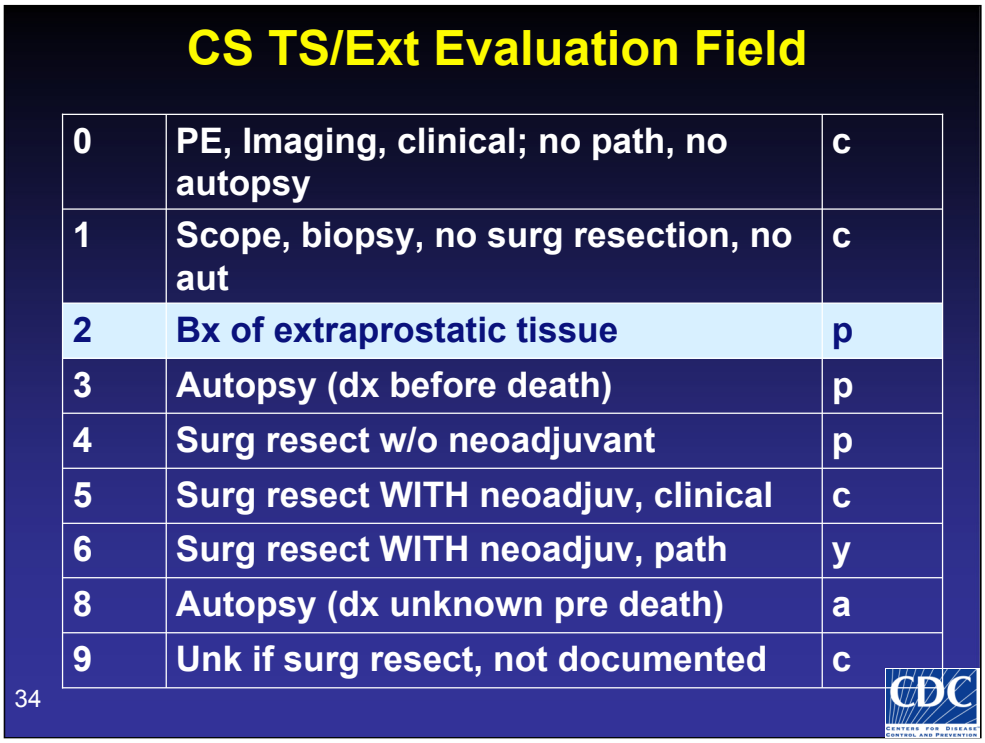
Code 50 includes Bladder neck, Bladder, NOS, Fixation, NOS, Rectovesical (Denonvillier's) fascia, Rectum; external sphincter

Code 52 muscles are the levator and skeletal muscle, NOS.

The definition of frozen pelvis for code 60 is included in the NOTES section.

Code 70 organs include Bone, Other organs, Penis, Sigmoid colon, and Soft Tissue other than periprostatic. In order to use this code, the tumor must be growing directly into the adjacent organ, not found as a metastasis within the organ.

How could we have code 95 (no evidence)? It is possible the prostate tumor regressed after it had metastasized to lymph nodes or other organs. If that is stated, you may want to verify this with your physician advisor. Another possibility is that all of the tumor was removed by a transurethral resection or core needle biopsies, but this is unlikely.



The Tumor Size and Extension evaluation field definitions are basically the same for this site as for the other schemas with one big exception. Because of code 2, the codes for autopsy for known cancer and surgical resection without neoadjuvant therapy shift down from the normal pattern. Code 2 was necessary to accommodate situations where a positive biopsy of the bladder or rectum determined that the case was Stage IV pathologically but without a prostatectomy. Remember that a regular prostatectomy specimen is Eval code 4 for prostate, not the usual code 3 for surgical resection.

The TS/Ext evaluation for this site uses both clinical extension info and pathologic info from Site Specific Factor 3 to derive a clinical or pathologic “T”. It will be pathologic if there were appropriate answers under SSF4; otherwise it will be clinical.

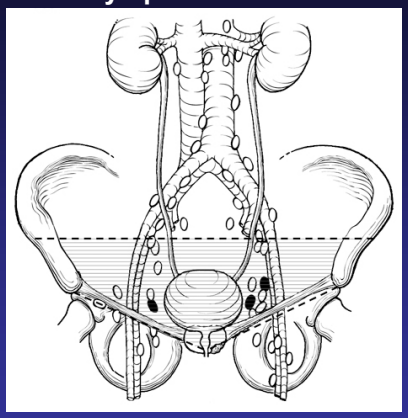
NPCR (and possibly your central registry) doesn’t want these codes. However, COC-approved hospitals must code the three eval fields, because they describe what kind of TNM is derived—clinical or pathologic.

Instructor: Emphasize again, if there is a prostatectomy, the eval code for extension relates to coding in SSF3, and CS TS/EXT is still coded with clinical information.

CS Lymph Nodes

- ***Inaccessible*** **site**
- **Codes**
  - **00 None**
  - **10 Regional LNs**
  - **80 LNs NOS**
  - **99 Unknown**
- **CS Reg Nodes Eval, # LN Pos, # LN Exam**
  - **Use Standard Table**

CS Lymph Nodes Code 10



AJCC Cancer Staging Atlas, 2006. Used with permission.

35

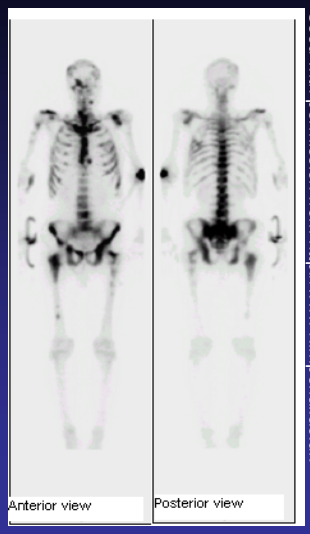
The prostate is considered an inaccessible site according to Collaborative Staging rules. You can find more description of inaccessible organs in the CS Manual Part 1, on page 14. If the cancer is early (T1, T2), there is no suspicion of mets, and the patient is treated as if he has early cancer, you can code the lymph nodes as 00, clinically negative.

Any positive nodes in the shaded area of the pelvis (below the bifurcation of the common iliac artery) will be code 10. These are the same regional nodes we discussed earlier with AJCC coding. We rarely use code 80. Because it means that you don't know whether the involved lymph nodes are regional or distant.

The Lymph Node Eval field, number of lymph nodes positive, and number of lymph nodes examined all use standard tables.

CS Mets at Dx

- ***Inaccessible*** **site**
- **Codes**
  - **00 None**
  - **11 Common iliac LN**
  - **12 Other distant LN**
  - **30 Bone mets (not direct)**
  - **35 [30 + (11 or 12)]**
  - **40 Other distant mets**
  - **45 Mets NOS**
  - **50 [40 + (11 or 12)]**
  - **55 [40 + (30 or 35)]**
  - **99 Unknown**



Used with permission from http://www1.imperial.ac.uk

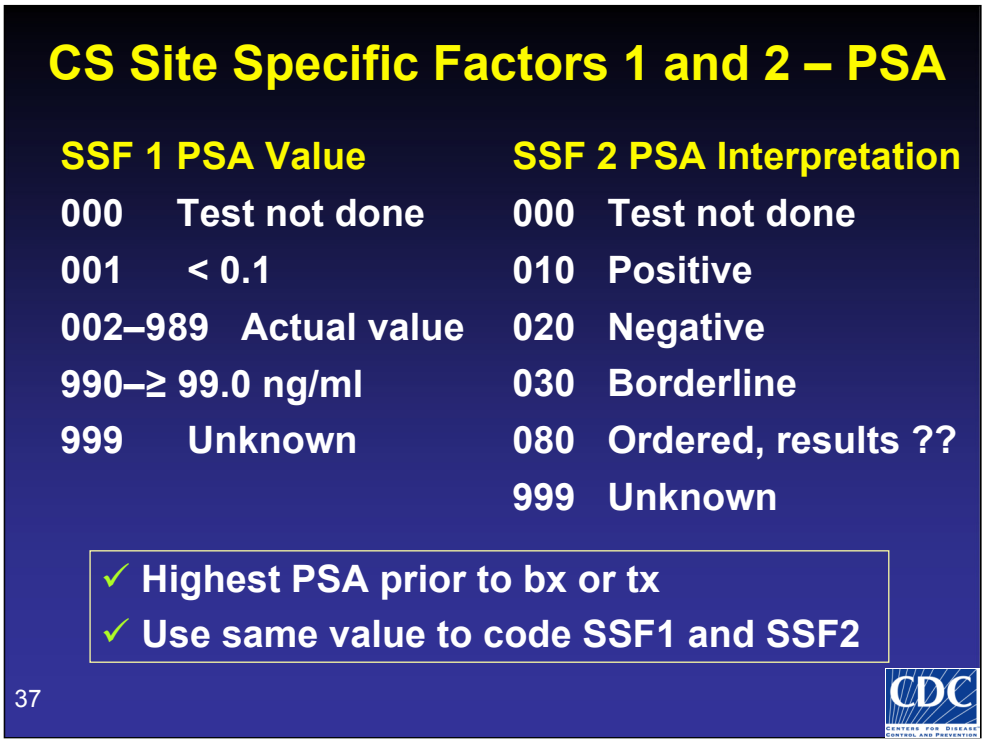
Code 30 Bone Mets

36

In Mets at Dx, code 12 for “Other distant lymph nodes” includes: Aortic, NOS (lateral or lumbar, para-aortic, periaortic), Cervical [inguinal, NOS; deep, NOS; node of Coquet or Rosenmuller (highest deep inguinal); superficial (femoral); retroperitoneal, NOS; scalene (inferior deep cervical) and supraclavicular (transverse cervical)].

Note that bone metastases by themselves have their own code. Bone mets combined with other distant involvement are coded in 35 or 55.

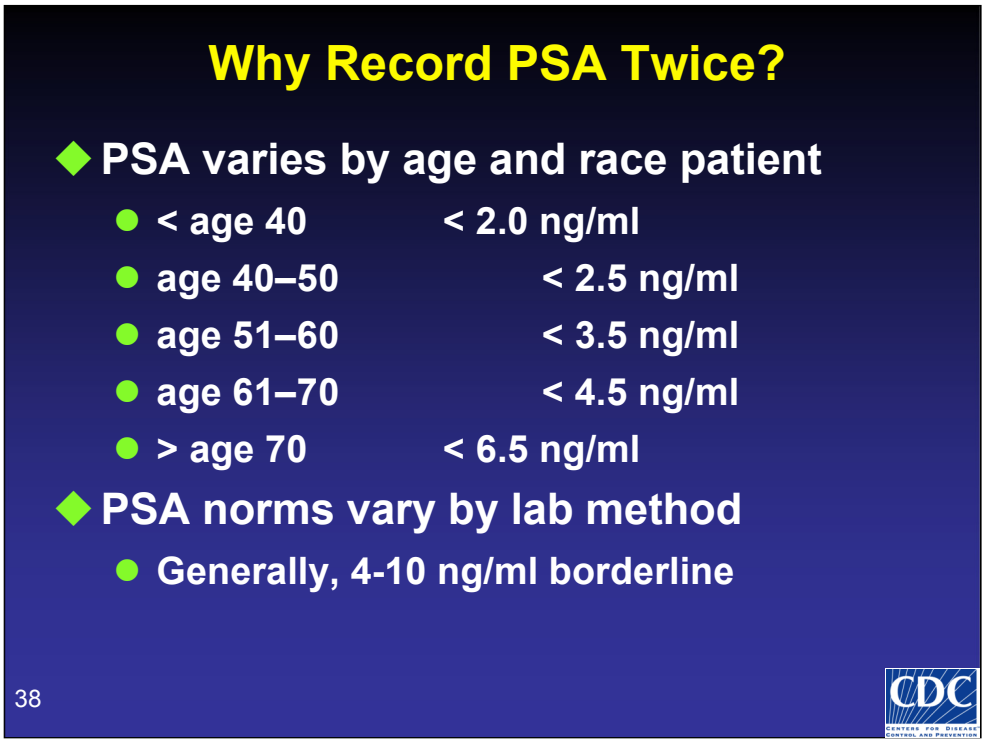
*It would be rare to have direct extension of prostate cancer to pelvic bone, but it could happen and it would be covered in the Extension Code 60.



Prostate uses all six site-specific factors.

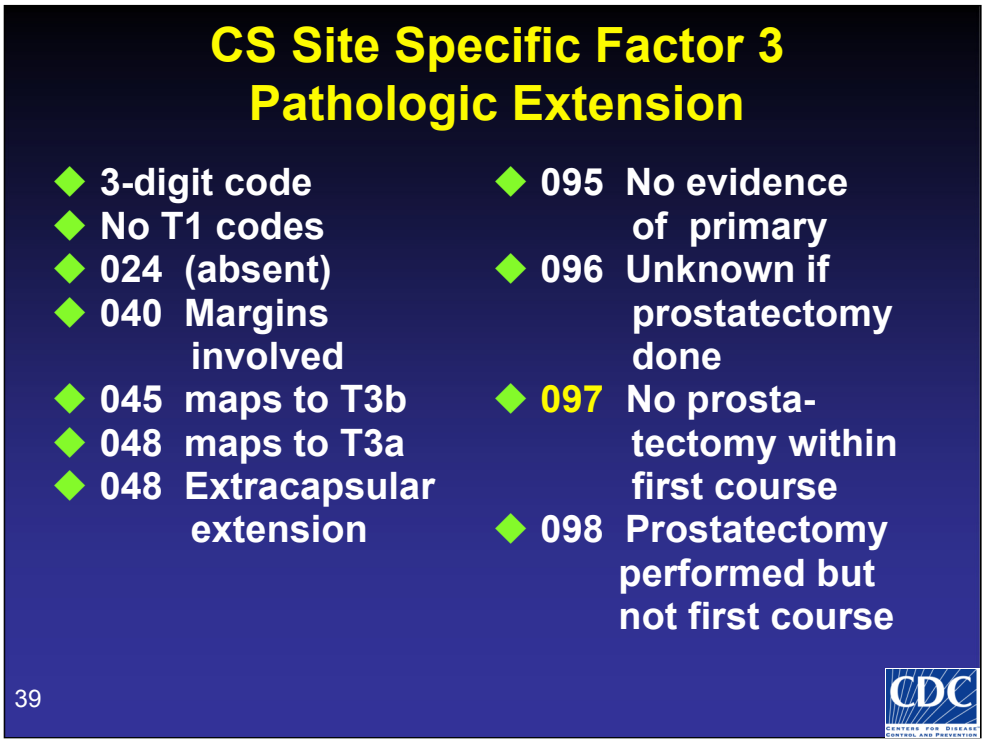
For SSF 1, PSA value, record the highest PSA value noted in the record prior to biopsy or treatment. Frequently, urologists will document a series of PSA results from the patient's history. Sometimes, they will even bounce up and down. Record the highest value.You can round up as needed for documentation purposes, so a PSA of 19.58 could be recorded as 196.

There is no standard definition of what is considered positive, negative, or borderline from the standard-setters. That is because every lab has it's own reference points. One good reference for the registrar to review is Recording Tumor Markers on the collaborative stage website (www.cancerstaging.org). And last, if you are not sure, code "999" for unknown.



Why do we record the absolute value of PSA and then decide if it is considered positive or not? In future studies, they will be able to look at the age of the patient and the absolute value. For those values that are questionable, they can look at what our lab called it (elevated or not). If you have a doctor dictating the value in the H&P without a normal range documented, take his/her word for it if it is called elevated or positive. As an example, if the doctor states that the patient has elevated PSA of 5, we code the value for SSF 1 and code the elevation for SSF 2.

How should a rising PSA be coded where value itself is not considered abnormal, but rate of change is considered abnormal and leads to a biopsy? If the physician documents the rising PSA is abnormal, you would code it that way. But if he just documents that the PSA was 2.0 in February and is now 2.5 in July, and therefore he recommends a biopsy, and those values are within normal limits, you would have to code it as normal. If you are uneasy with that definition, discuss it with the urologist or code the SSF Factor 2 as “999”



Site-specific Factor 3 is the pathologic extension, similar to the CS Extension field but based on prostatectomy information.

The codes for this field are similar to the CS Extension codes, but without any of the codes that would derive a T1 (no codes between 000 and 020).

There was a little problem in the code hierarchy. Usually, the higher the number, the higher the stage. That is, except for codes 045, which maps to a T3b and code 048, which maps to a T3a. In version 1.03, a note was added to explain that 045 would take precedence over 048 if that answer is appropriate.

097 is used when a prostatectomy is not done in first course.

098 is used when a patient undergoes a prostatectomy, but it is not within the definitions of first course of treatment. For example, a patient may be diagnosed in a physician's office and decide on "watch and wait" as his first course of treatment. If that patient develops symptoms and decides to have a prostatectomy for apparent progression of disease, a prostatectomy performed at your facility would not be first course but you could use code 098 to indicate the status when you are abstracting the case. Another example might be a patient who opts for cryotherapy as first course of treatment. If the prostate cancer recurs and the patient undergoes prostatectomy, it would not be first course of treatment, so when the case is abstracted Site-Specific Factor 3 would be coded as 098.

Note that we are not supposed to go back into the abstract and add this code if a prostatectomy is done later. For example, a patient is diagnosed at your hospital and opts for close observation, you would code 097 no prostatectomy when you abstract the case. If the patient comes back for a prostatectomy one year later, do not change the code from 097 to 098.

CS Site Specific Factor 4 – Apex

AJCC Cancer Staging Atlas, 2006. Used with permission.

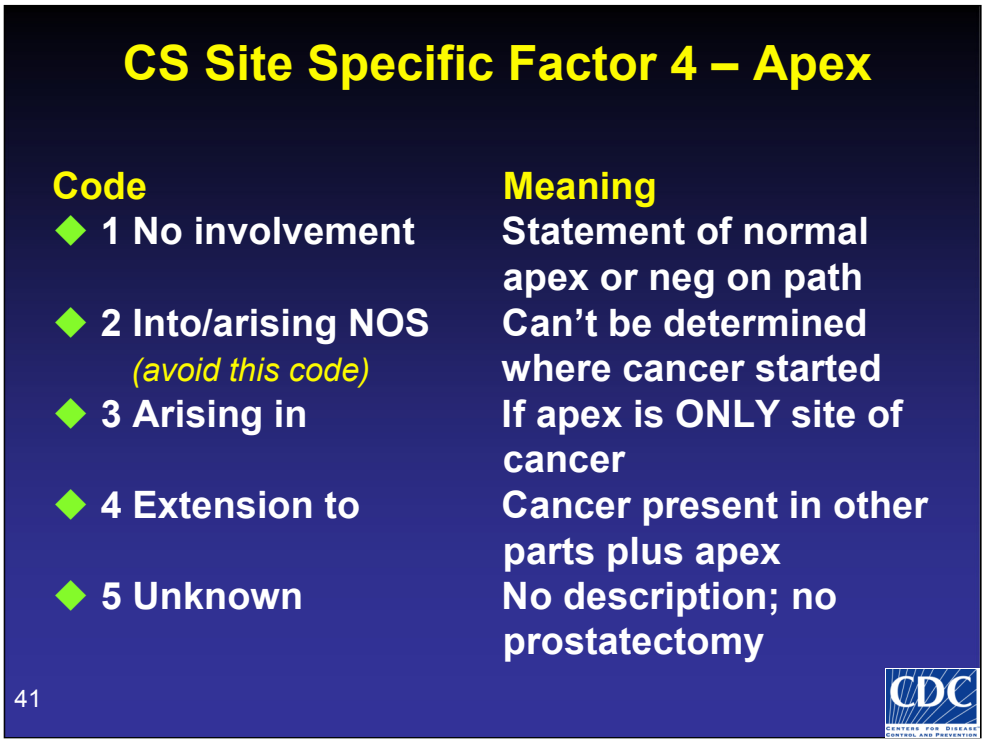
1 No involvement
2 Into/arising in
3 Arising in
4 Extension into
5 Apex extension unknown

1st number = clinical
2nd number = path
3rd number = 0

40

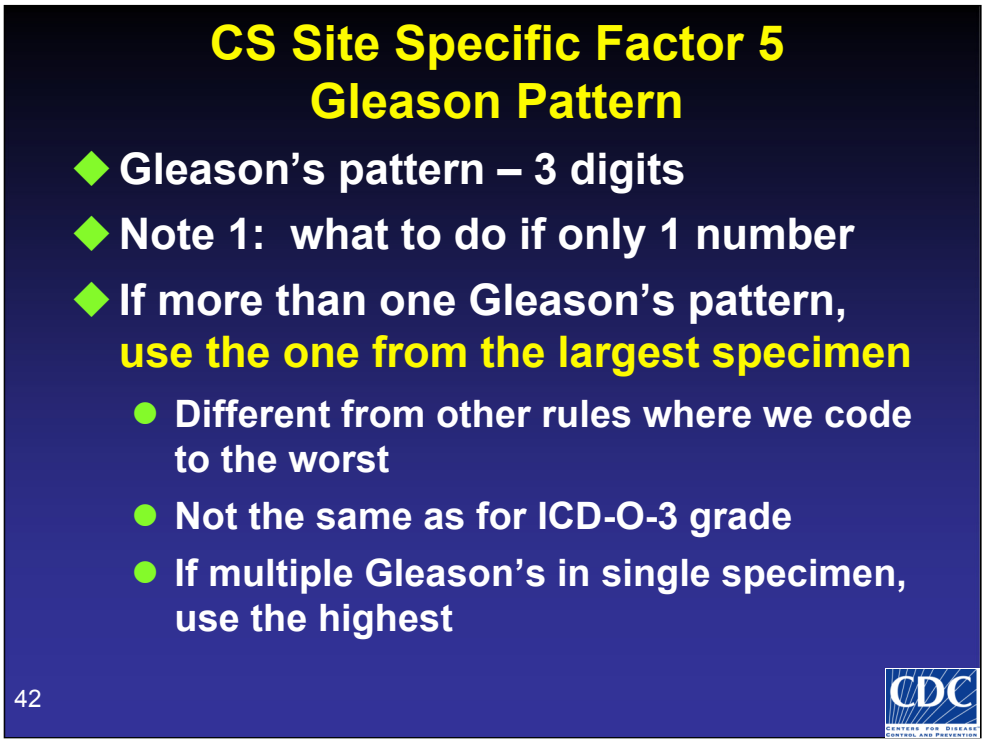
Originally, this field was to be coded about the prostatic acid phosphatase test. PAP is rarely done any more, so those codes were made obsolete.

Data has been collected over 30 years for staging in central registries. The third edition of the AJCC manual listed apex involvement as a factor affecting the T classification. In later editions, urology curators and committees decided that apex involvement was not significant and took it out. Right now, we're collecting apex involvement for historical comparisons. This does not relate to the 6th edition AJCC. Do the best you can to choose between 2, 3, or 4. If prostatectomy is not done, code 5 will be the middle or second number. The third number is always 0.



Here are some guidelines on how to code this field.

To use code 1, the apex should be specifically mentioned as negative.
Avoid code 2 because it is too nebulous.
Use code 3 if the apex is the only positive area for cancer.
Code 4 is used when the apex and other parts of the prostate are positive.
Code 5 is used when there is no mention of the apex at all.



There is a large prognostic difference in Gleason patterns that are in the 1 to 3 range versus the 4 to 5 range. For example, Gleason pattern 3 + 4 has a better prognosis than Gleason 4 + 3, although they both add to a score 7.

Note 1 tries to give us various scenarios of what happens with Gleason scoring in path reports.

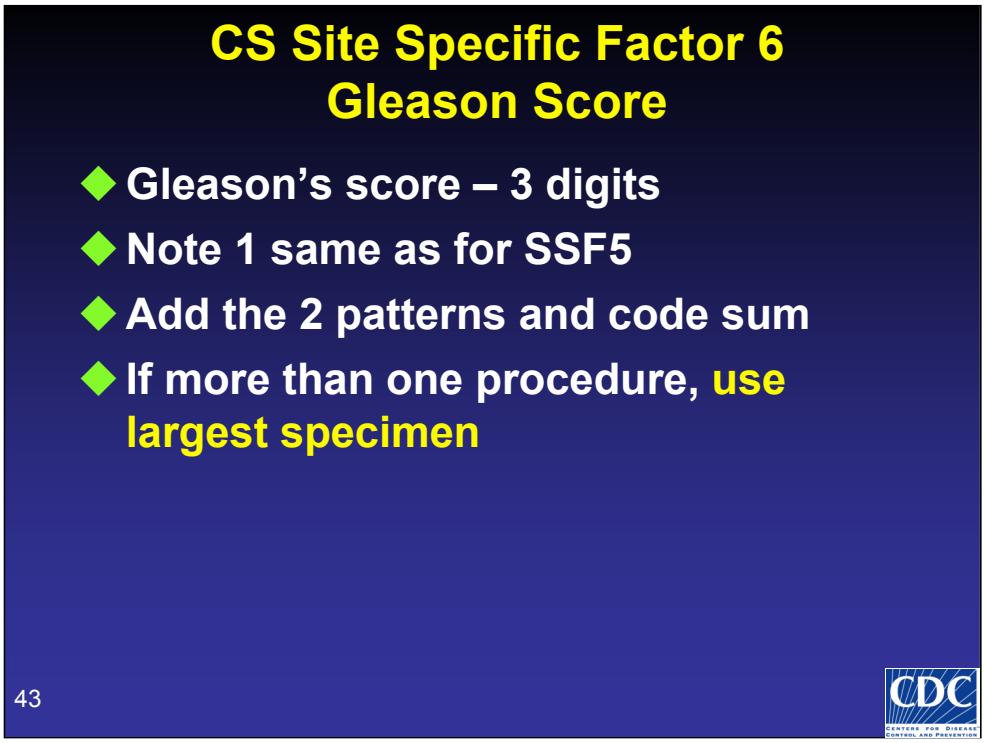
If the path report states Gleason grade 3 + 4, we have a primary pattern of 3 and a secondary pattern of 4 (code 034).

If the path report states Gleason 3 and nothing else, we are to assume it is the primary pattern and the secondary pattern would be 9 (code 039). (This applies to any number less than or equal to 5.)

If the path report states only one number over 5, we assume its the score, and we have no pattern information (code 099). We use the stated number in SSF6.

According to Note 2 in SSF 5 (Note 3 in SSF 6), if the patient has a biopsy (Gleason 3 + 4) and a prostatectomy (Gleason 3 + 3), we would use the pattern from the largest specimen (3 + 3). This is different than Rule G of the ICD-O-3 where we code to the highest grade listed.

If the patient only had a biopsy with multiple Gleason patterns noted, code the worst (highest). Note that this is only when there are multiple biopsies which will be the same size. Our instructions now are to code from the larger specimen and if one of the biopsies was larger or had more samples, we would use the information from it. If the patient had a biopsy and prostatectomy, code from the prostatectomy specimen. If there are multiple Gleason's patterns in the prostatectomy specimen, code the highest values.

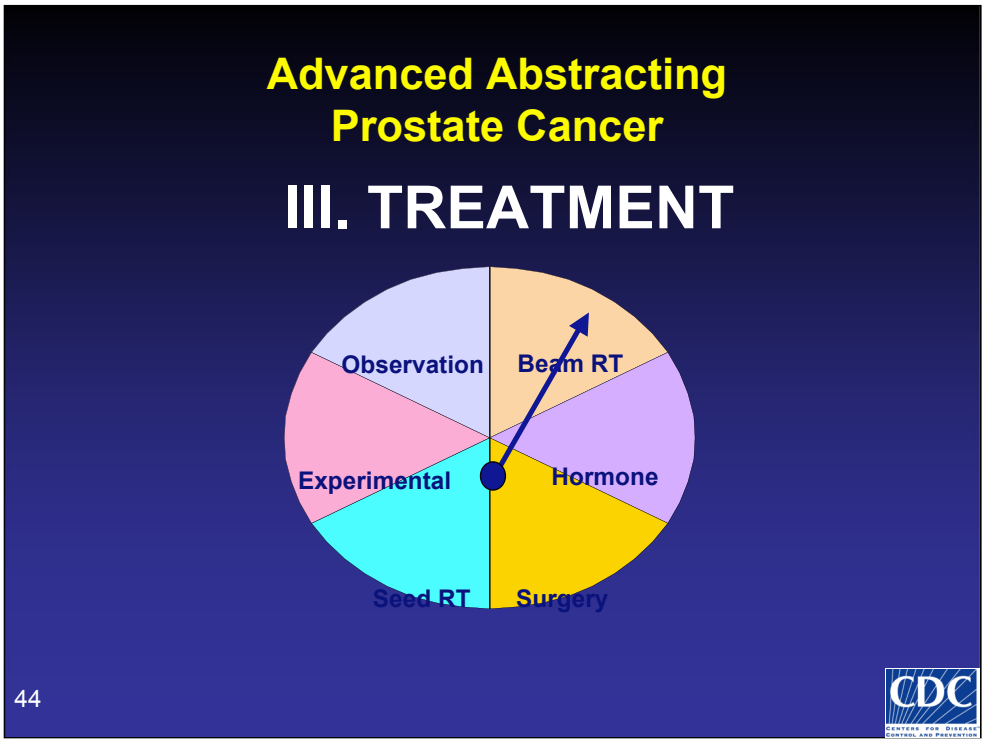


As previously noted, if the path report stated only one number over 5, we assume it's the score. We have no pattern to code in SSF 5, and we use the number in the SSF6.

According to the new Note 3 in SSF 6, if the patient has a biopsy (Gleason 3 + 4 = 7) and a prostatectomy (Gleason 3 + 3 = 6), we would code the score from the largest specimen (3 + 3 = 6). Code SSF 6 as 006. This is different than Rule G of the ICD-O-3 where we code to the worst grade listed.

If the patient only had a biopsy with multiple Gleason patterns noted, code the worst (highest). Note that this is only when there are multiple biopsies which will be the same size. Our instructions now are to code from the larger specimen, and if one of the biopsies was larger or had more samples, we would use the information from it. If patient had a biopsy and prostatectomy, code from the prostatectomy specimen. If there are multiple Gleason's patterns in the prostatectomy specimen, code the highest values.

Note: If only one number is given, and it's less than 5, use 999 in this field.

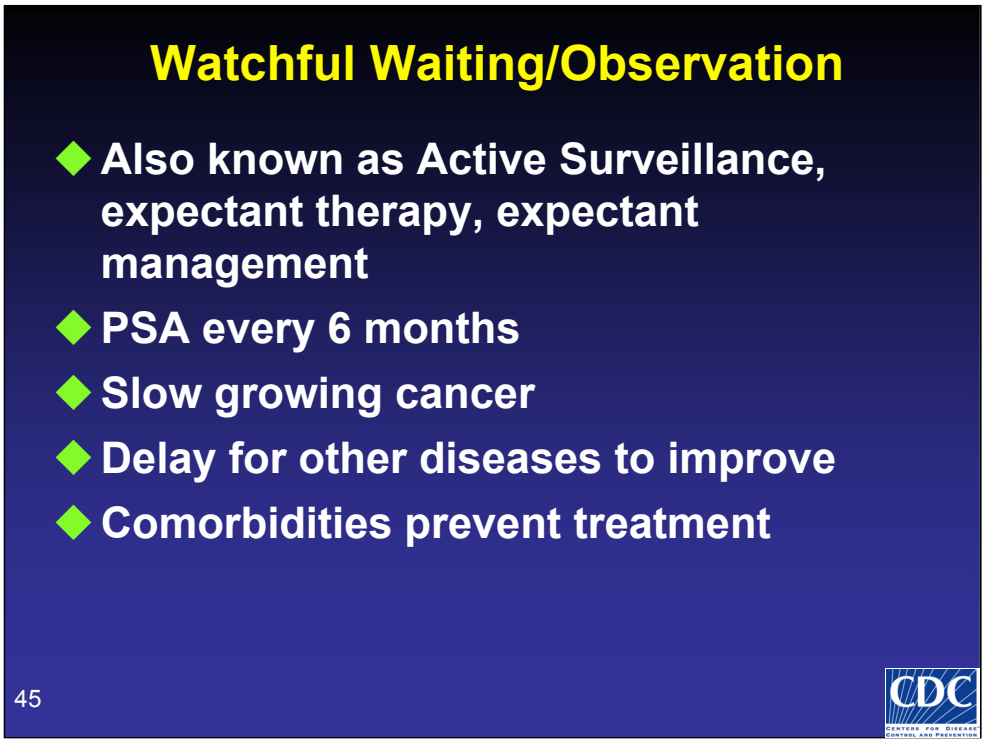


There are too many choices of first course treatment for gentlemen to choose easily. Let's look at some of them in this next section.

First, we have an opportunity for discussion. How do we record treatment when the patient takes a long time to decide on treatment? In general, prostate cancer is a slow-growing process. The patient has probably not altered the stage or outcome by taking six months to decide what treatment he wants. In order to be able to use data on patients for outcome and treatment comparisons, we must accurately record what the patient has chosen.

Here is a common example. A patient is diagnosed in November, but wants to travel to Texas for the winter season and have his prostatectomy in April. His PSA was 5.5, clinical T1c, Gleason 2+3. When he has his prostatectomy, Gleason is 3+3, PSA is now 6, and lymph nodes are negative. His course has not been altered by the delay in treatment. He is still pT2N0, stage 2. His prostatectomy should be included in first course.

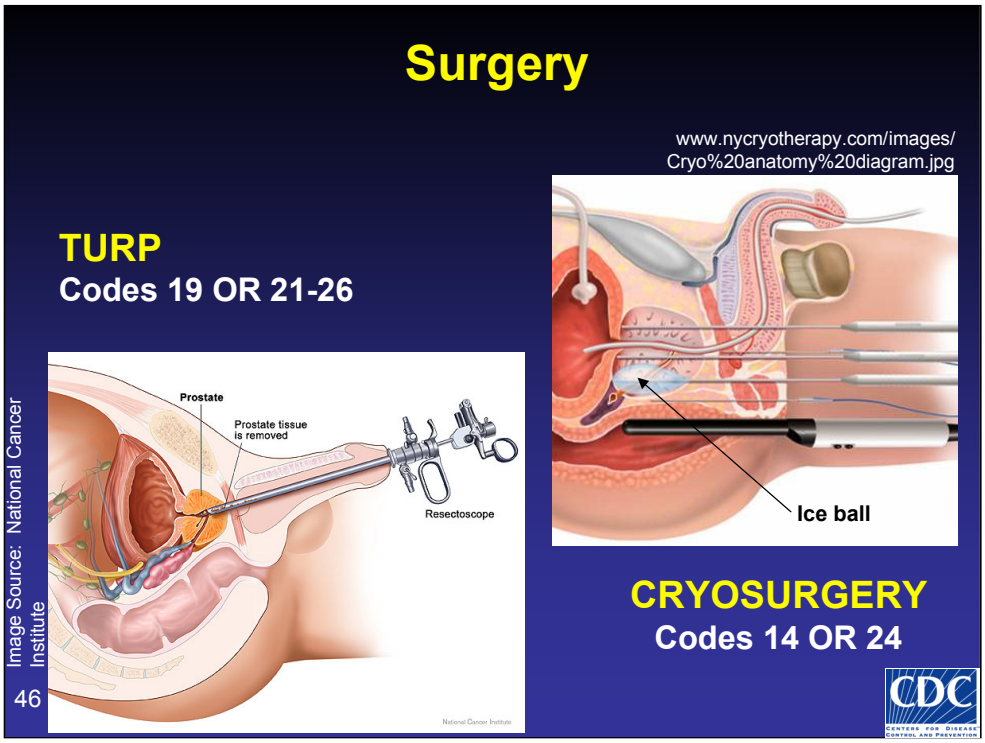
If the same gentleman came back for his prostatectomy and his PSA had increased to 14, his Gleason was now 3+4, and he was pT3, it should be considered that he had a fast-growing prostate cancer and the treatment delay has altered his survival statistics. Prostatectomy in this case should be documented as second course.



Observation means the patient will have no active treatment trying to rid the body of cancer. The patient may have a PSA test at least every six months to monitor disease progress.

There are many reasons that observation would be appropriate. It could be that the patient has a slow-growing cancer, especially if the PSA is low in an older patient. In the past, pathologists would review DNA results of the tumor (or ploidy status) to try to determine which cancers would be slow-growing, but there was no consensus regarding the results. So that practice was discontinued in the early 1990s.

The patient may have another disease process, such as needing open heart surgery prior to making treatment decisions for a prostate cancer that is not felt to be aggressive enough to treat at the present time. Or, the patient may have comorbidities that prevent other treatments from being administered.



TURP (transurethral resection of prostate – an instrument is inserted through the urethra to remove the section of the prostate that is blocking urine flow, using an electrical loop).

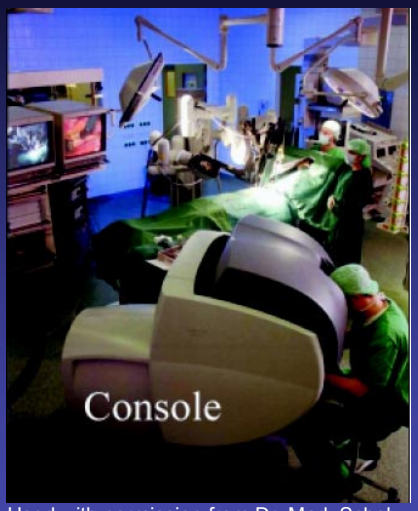
The TURP could start out as treatment for a benign condition (where it is unknown if cancer is in the prostate) versus a known cancer with hope the TURP will control the symptoms of hypertrophy. We use different codes depending on the intent of the procedure (22 versus 23 in the FORDS surgery codes).

Cryosurgery To give a little background, the creation of intracellular ice is lethal to nearly all cells. Rapid temperature loss enhances the formation of intracellular ice. As ice forms around a cell, the free water inside the cell is drawn off, shrinking the cell and collapsing many of the walls or membranes inside the cell, releasing proteins or chemicals which can be toxic. Then, as the ice that surrounds shrunken cells begins to thaw, large amounts of free water produced by the thawing ice will rush back inside the cells, causing them to burst. Thus it is believed by some that the physical features of cryosurgery that are most important in producing extensive cell destruction include rapid freezing to very low (-195 degrees C) temperatures, and a slow thawing.
The difference between codes in the 10–19 range and the 20–29 range is that a specimen is sent to the pathology department for analysis from procedures in the 20–29 range.

Note: codes 18–19 are provided primarily for conversion from ROADS to FORDS, should not be used for 2004 and later.

Prostatectomy

- Perineal, retropubic, suprapubic–depends on patient's anatomy and surgical history
  - Nerve-sparing
  - Robotic
  - Codes 30 - 80



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There are different styles of prostatectomy incisions and goals. Nerve-sparing has been a surgical objective for the past 10 years at least, with the goal that the patient would be able to continue with urinary continence, sexual function, and rectal function.

Perineal approach: an incision between rectum and scrotum

Supra- or Retropubic: An incision into the abdomen from navel to pubic bone. The difference is in how the prostate is removed.

Robotic: The surgeon is seated at the console and the rest of the team is at the patient's side, as shown in the illustration. Video monitors display the internal view of the operation field as seen by the surgeon. Unfortunately there is no difference in codes for open versus robotic prostatectomy, so you may want to document this technique in a user-defined field for administrative reports.

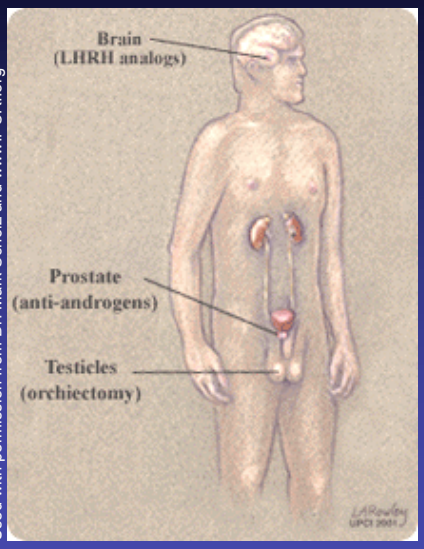
Robotic is only done if the patient is a candidate for laparoscopic-assisted prostatectomy.

Robotic has advantages over laparoscopic: better hand/eye coordination, better depth perception, and intuitive hand movements.

Robotic also has disadvantages over laparoscopic: robots are bulky and limit the working space of assistants, limited instruments are available, and robots are costly ($1 million to start, $100,000 per year).

Laparoscopic non-robotic prostatectomy may still be done, but requires greater technical skill according to www.e-medicine.com.

Hormone Therapy



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- LHRH analogs
  - Lupron, Zoladex
  - Viadur, Trelstar
- Androgen blockades
  - Casodex, Eulexin, Nilandrone
- Estrogen therapy (DES)
- Orchiectomy not coded here

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Prostate cancer is a very hormonally sensitive disease. Prostate cancer can be controlled by altering the man's hormone balance with drugs.

Testosterone: 90–95% is made in the testicles, 5–10% is made in the adrenal glands. The purpose of hormone therapy is to counteract testosterone production that stimulates growth of prostatic cancer cells.

LHRH analogs (luteinizing hormone-releasing hormones): Leuprolide acetate (Lupron) and goserelin acetate (Zoladex). A newer form is Viadur (leuprolide acetate implant–a once per year implant). LHRH analogs suppress testosterone production. Trelstar is available in once per month or once every 3 month injections.

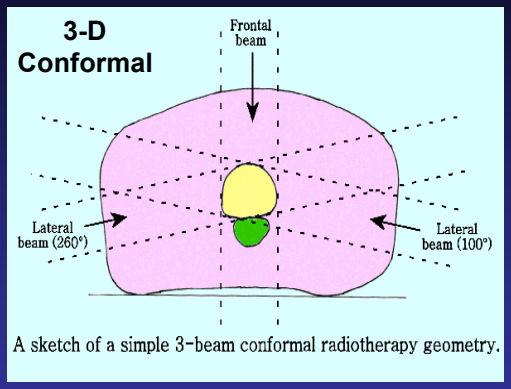
Androgen blockade: Blocks testosterone made in testicles and adrenal glands. Agents include flutamide (Eulexin), bicalutamide (Casodex) and nilutamide (Nilandron).

Estrogen therapy: Suppresses testosterone – diethylstilbestrol (DES). Rare for first course due to side effects when other drugs less dangerous.

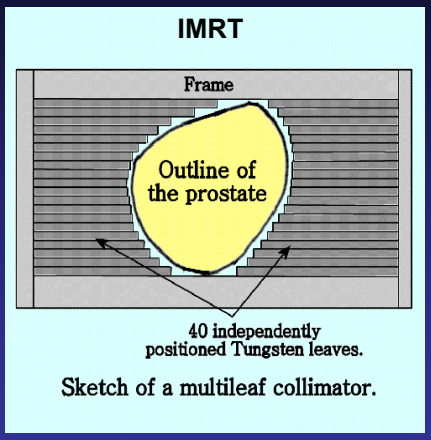
When a patient is on hormones, you just code that fact… we can gather the names of the drugs if there are fields in the abstract, but it doesn't alter the code.

Orchiectomy used to be coded in the hormone fields. You need to remember that fact if you are conducting a study of prostate cancer and have an older registry. Hormonal therapy is not curative, because it does not remove or destroy the prostate. However, it can provide a long symptom-free time period for the patient. If the hormones were discontinued, the PSA would continue to rise and/or the prostate cancer would metastasize.

Beam Radiation



Prostate sitting on rectum



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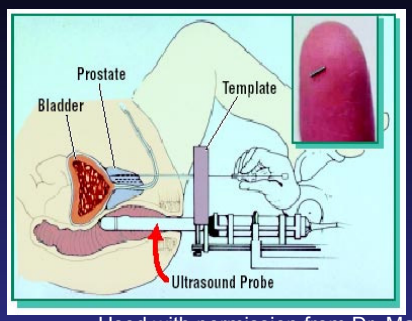
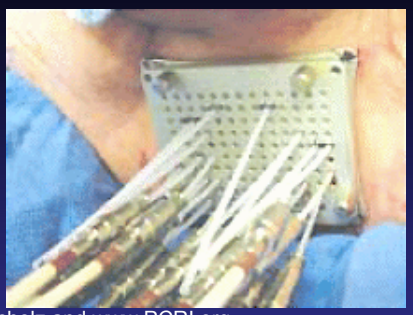
External beam therapy is administered as an outpatient over a 5 to 8 week period with a dose around 7000 cGY. Usually five treatments, each lasting several minutes, are given weekly. Look for words describing 3D or intensity modulated radiation therapy (IMRT) describing how the treatment was planned (modality), because this code takes precedence over other modalities. The picture shows how a single beam of IMRT is shaped. The patient may receive nine or more beams from different angles, requiring different shapes.

Beam radiation and brachytherapy (seeds) may be given. We usually see it as beam first, and code the seeds as a boost per Commission on Cancer instructions.

Brachytherapy (HDR)





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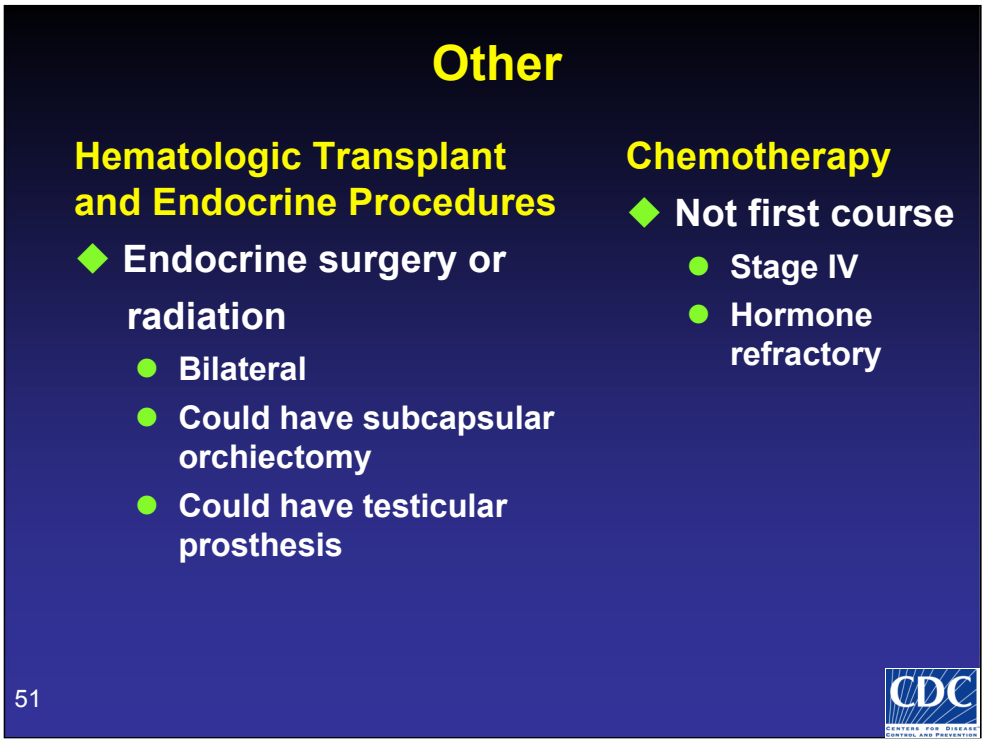
Seed implantation or Brachytherapy involves tiny (much smaller than grains of rice) radioactive metal seeds, (Iodine129 or Palladium103), implanted permanently into the prostate. The procedure is done under general anesthesia. The picture on the left shows the stylus pressed against the scrotum as it leaves the seeds in place.

Another technique is high dose rate brachytherapy.

The catheters are placed (picture on right) under anesthesia. A machine called an after-loader moves the radioactive seeds into place within the prostate. The high dose Iridium (Ir-192) seeds are left in place for a matter of minutes and then removed. The patient is treated twice per day for a few days, after which the catheters are removed and the treatment is finished.

If brachytherapy is given alone (monotherapy)—code in the regional dose field as 88888.

Brachytherapy is coded as 88888 in the regional dose and boost dose fields of a cancer abstract. Although the dosage is calculated in Gray or centiGray like external beam radiation, the total dosage may be difficult to calculate, or it may not be on the same scale as external beam radiation. For example, low dose radiation for prostate cancer involves inserting 50 to 100 radioactive seeds and allowing the radiation to decay over a period of months. The treatment is continuous over that time, not in “fractions.” High dose rate brachytherapy may involve two or three fractions, but the total dose to a very limited area such as the prostate only might be much higher than for conventional external beam. The dosages for the two types of radiation really cannot be compared. Since external beam is more common, the FORDS manual says to code regional dose and boost dose as 88888 when the patient receives brachytherapy. If dosages, length of time, and number of seeds are reported in the radiation treatment summary, document them in a treatment text field.



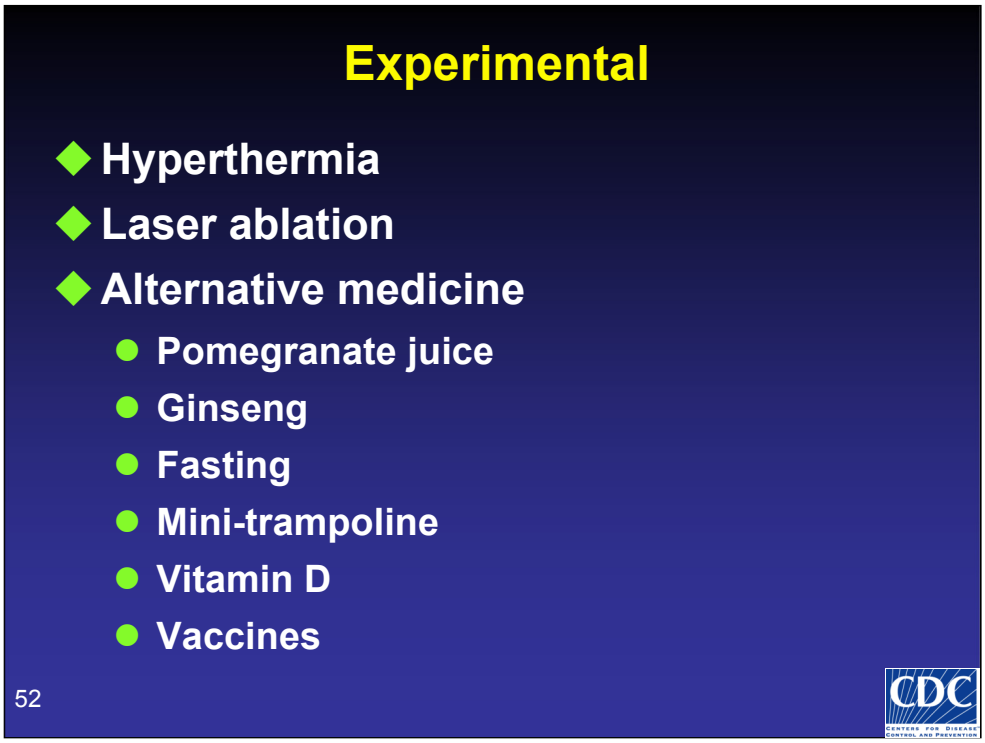
Radiation or surgery to the testicles or adrenal glands must be bilateral to count as an endocrine procedure. But if only one gland is left for some reason (such as history of orchiectomy for past testicular cancer), treating the remaining one should be coded as endocrine surgery.

Note: These codes were apparently removed from the hormone therapy category because they are procedures rather than drugs.

Once deprived of testosterone, most prostate cancer cells undergo *apoptosis*, or programmed cell death. In 80% or more of patients, however, some of the cells survive and continue to grow, such that most patients will eventually show signs of cancer growth.

In patients with very advanced and widespread cancer, the expected benefit of orchiectomy usually lasts two years. If the cancer is in one to three sites as measured on bone scan, a remission of about five years is expected. Patients with cancer in the lymph glands will enjoy, on average, about eight years before cancer growth is detectable.

Chemotherapy is usually not given as first course therapy. It may be given to patients who develop metastatic recurrence or hormone refractory disease in the future.

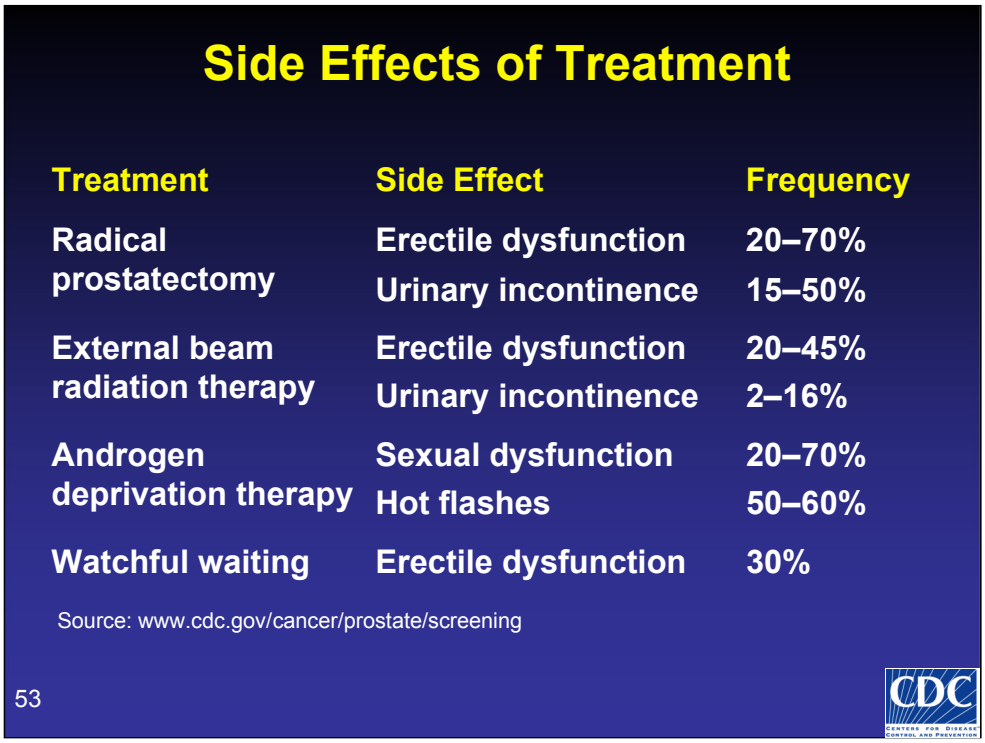


There are a number of other types of prostate cancer treatments, most of which have not been proven so far to be effective:

HYPERTHERMIA: Put a probe in and heat the prostate (45–60 degrees Centigrade)

LASER ABLATION: Using a laser to destroy internal prostate tissue.

The alternative medicines listed are some that were found on the internet. Some are being studied and in clinical trials, while others are just questionable alternative choices. For example, mini-trampoline is just what it sounds like, a man jumping on a mini-trampoline. The websites lists "It rids the body of toxins, fatigue substances, dead cells, cancer cells…" (www.prostate90.com)



How is a patient to decide what should be first course of therapy?. It is a very personal decision. There should be lots of discussion. Truthfully, the patient should talk to a surgeon as well as a radiation oncologist. Patients usually speak with urologist first, then may be referred to radiation oncology or surgery.

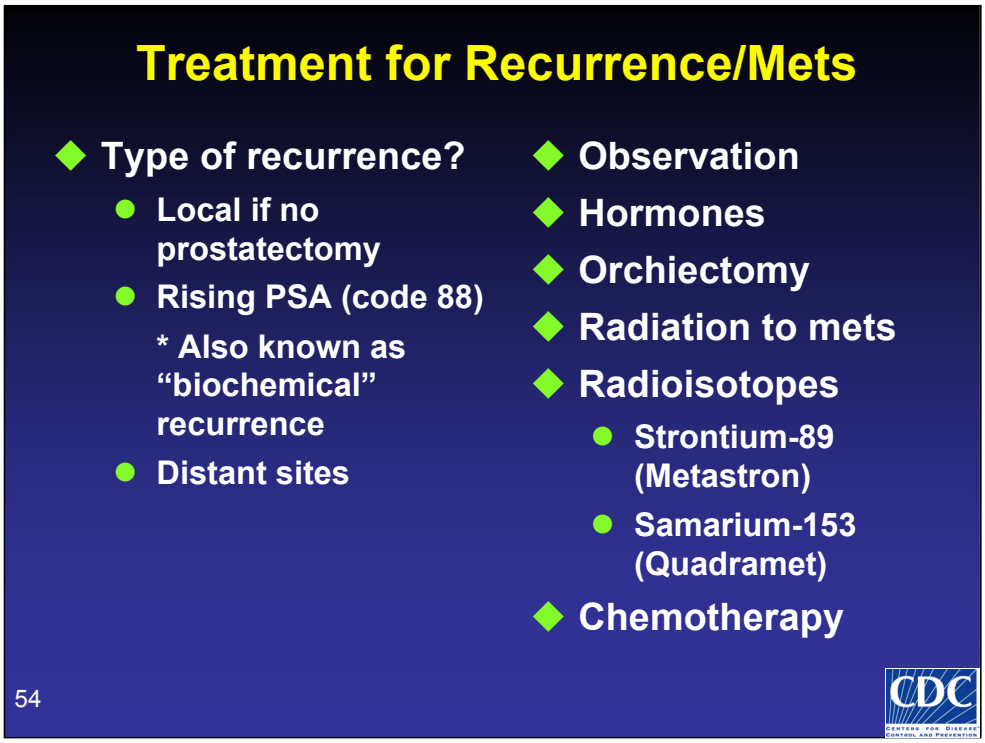
All of the treatment options have side effects; there is no way to know if the patient will have them all or how severe they will be.

Bowel irritation, especially if radiation is used (called radiation proctitis)

Emotional, especially if loss of sex life

Infertility (although most patients are over 60 years old and probably not considering fatherhood)

Fatigue

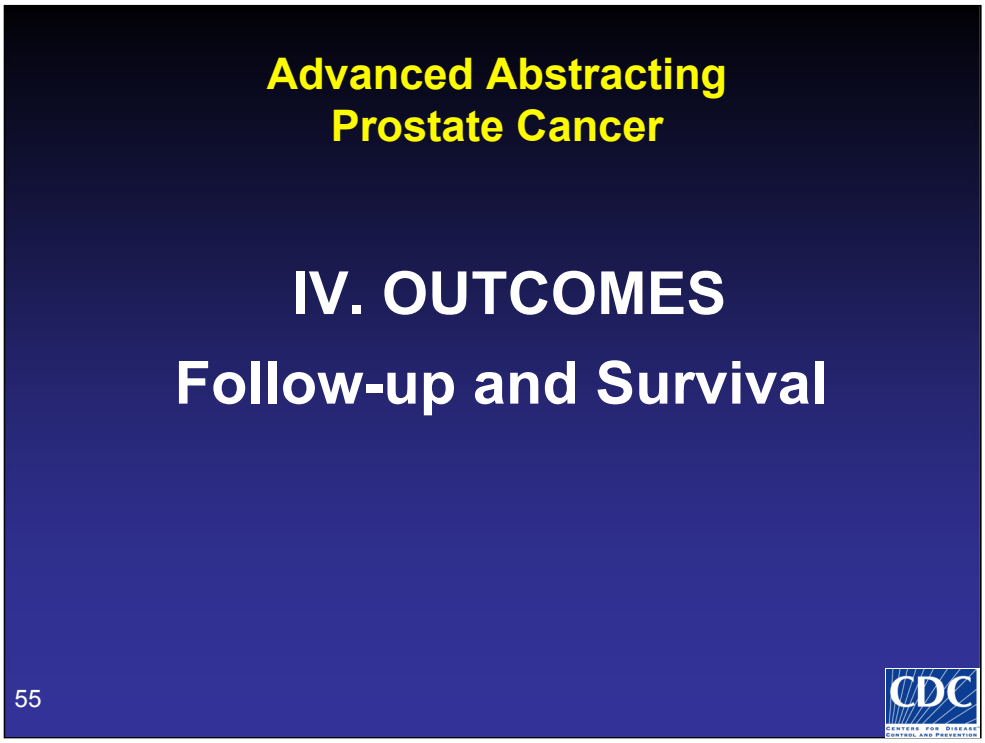


Prostate cancer can recur locally if the prostate has not been removed. More often, a urologist will report that the PSA is rising, and the patient has a "biochemical" recurrence. That means the physician cannot find any physical or radiologic proof of where the cancer has recurred, but the rising PSA indicates the cancer has come back. We code 88 for "Disease has recurred, but the type of recurrence is unknown." A patient could be diagnosed with residual tumor in the prostate bed (coded as local recurrence per a question submitted to the COC I&R). A patient could also be diagnosed with bone or other distant mets.

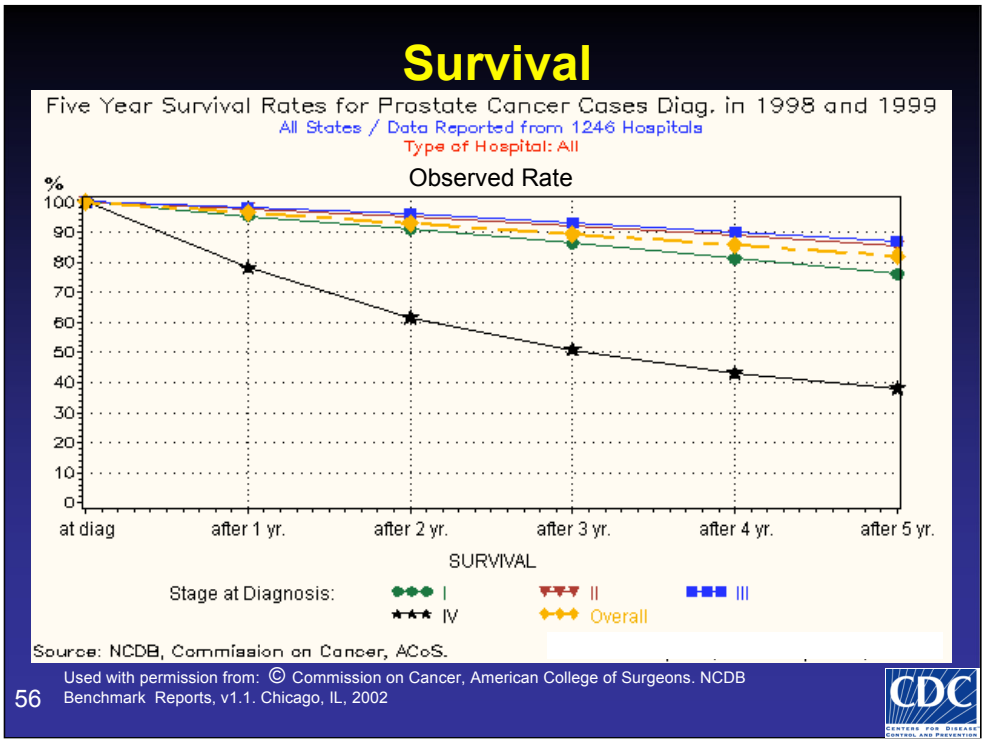
There are a variety of ways to treat recurrence. The patient may put off treatment or choose observation for as long as he remains relatively asymptomatic. Hormones can cause the PSA to decrease as long as the patient remains on them. A more permanent hormone control would be for the patient to have an orchiectomy, but that is hard to convince a patient to accept.

Patients with distant metastases may choose radiation if the bone mets are painful. If the patient has not had much previous therapy, especially radiation, the patient and his physicians may choose radioisotopes of strontium or samarium. This is an intravenous injection given every 3 to 6 months as long as it is helpful. But if the patient has had other therapies that impair the bone marrow, this treatment may not be possible.

And different chemotherapy drugs may be offered, but are still not very effective.

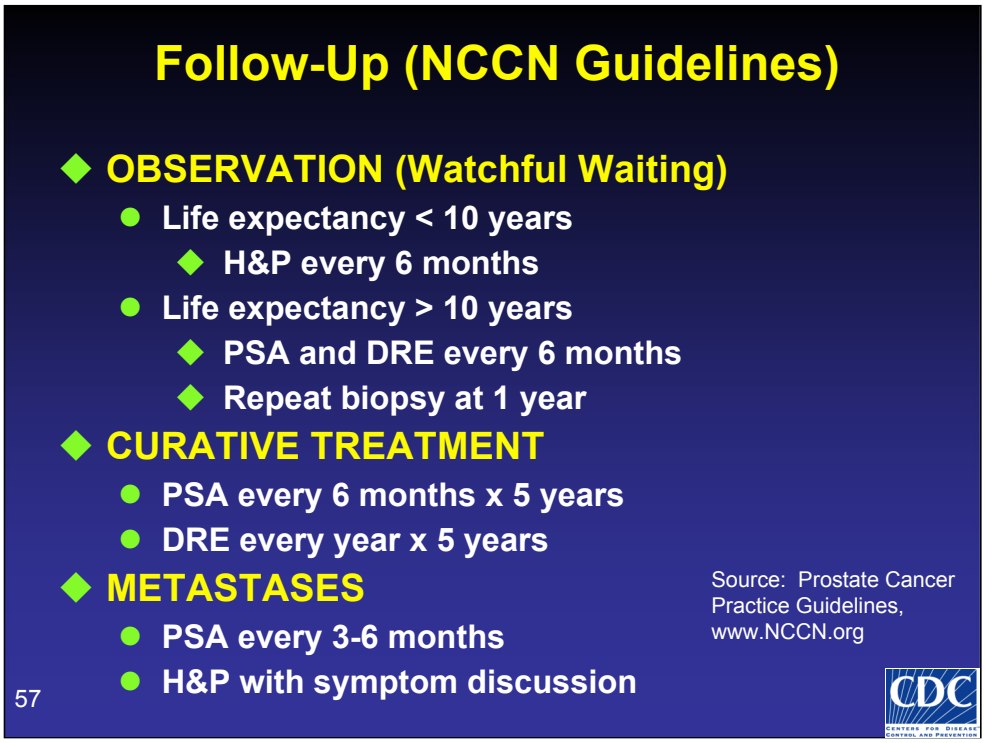


It is said that most men die *with* their prostate cancer, not *from* it. Let's take a quick look at survival rates and recommended physician follow-up.



Because of the great variety of treatments offered, it is difficult to find a good comparison graph for survival. This graph came from the NCDB website of the COC in the public view area. Interestingly, on this graph, Stage I does worse than Stage II and Stage III in survival. (Stage II and Stage III are almost the exact same line and hard to see on the graph.) Why is Stage I reflecting worse survival? Because this is an Observed Rate graph and any cause of death (not just cancer) influences the line on the graph. Remember that the majority of patients who are diagnosed at age 65 or older have comorbidities. Stage I patients are those who were incidentally found to have cancer, probably at TURP, and may have chosen no treatment or have been ineligible for further treatment. This group is also a smaller group in number than Stage II or Stage IV.

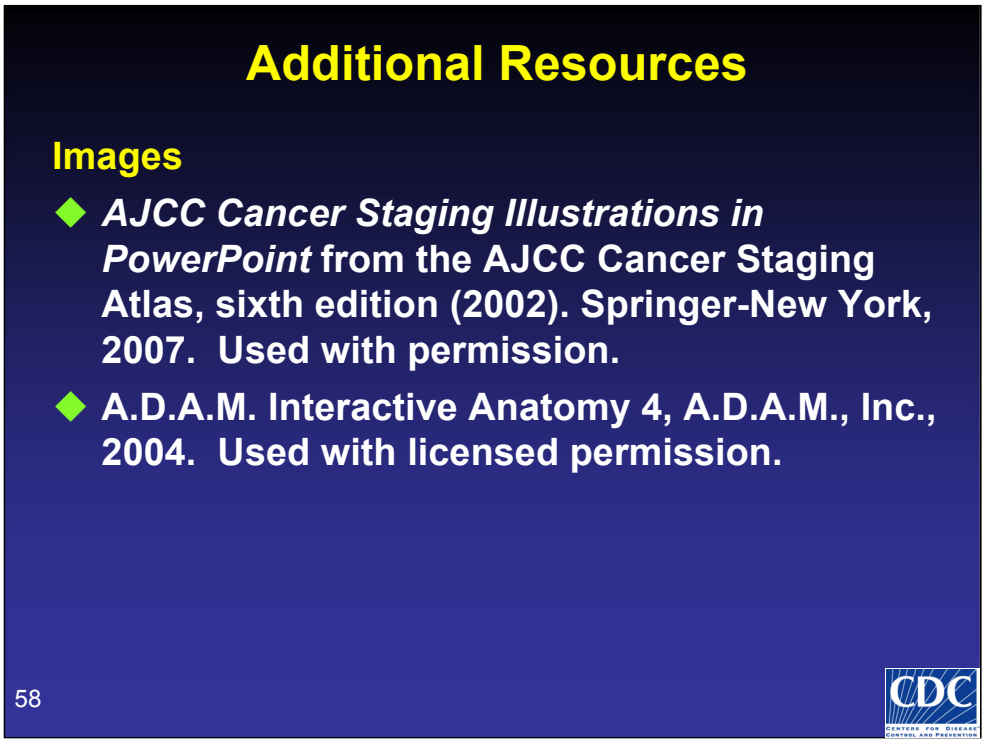
According to the American Cancer Society, “Overall, 99% of men diagnosed with prostate cancer survive at least 5 years. Further, 92% survive at least 10 years, and 61% survive at least 15 years.”



The kind of follow-up the patient has depends on what kind of treatment he chose or could choose. These follow-up guidelines are from the National Comprehensive Cancer Network (NCCN).

At a minimum, the patient will have PSA blood tests. If the patient is not stage IV, the patient should also have rectal exams according to the schedule noted on the slide.

This concludes the prostate cancer advanced abstracting presentation.



These are some additional sources that provided pictures and information for this presentation.

The findings and conclusions in this presentation are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.

For information about CDC's
Cancer Prevention and Control Programs
and the
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Please visit

www.cdc.gov/cancer/npcr